

# ATLANTIC JOURNAL

AND

## FRIEND OF KNOWLEDGE:

A CYCLOPÆDIC JOURNAL AND REVIEW

OF UNIVERSAL SCIENCE AND KNOWLEDGE:

HISTORICAL, NATURAL, AND MEDICAL ARTS AND SCIENCES:

INDUSTRY, AGRICULTURE, EDUCATION AND EVERY KIND OF USEFUL INFORMATION:

WITH NUMEROUS FIGURES.

EDITOR, C. S. RAFLNESQUE,

Professor of Historical and Natural Sciences, &c.

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*Knowledge is the mental food of man.*

It has been impossible to give this year all the articles prepared for this Journal, owing to the length of some, or the nature of others; but by substitutions as great a number and variety has been given. By an oversight the articles have not been numbered in succession as contemplated: this omission is now repaired here.

### ARTICLE 88.—PRINCIPLES OF JACOTOT OR HIS SYSTEM OF INSTRUCTION.

This age so fecund in improvements has not neglected to improve education, the great basis of civilization. The intuitive and monitorial plans, those of Pestalozzi, Fellenberg, Rensselaer, Lancaster, are real improvements, as well as the Infant Schools, Teachers Schools, &c. But has the system of Jacotot any similar claim?

He calls it, the Natural Method of Universal Instruction and Intellectual Emancipation, a very bold and assuming title; nay he asserts that it is entirely new, while the same principles had long ago been proposed in France, and lately applied by Dufief and Hamilton to teach languages.

The outlines of Jacotot's System have been translated and published in Philadelphia, 1831, by Victor Guillou, divided in 3 parts. 1. Reading. 2. Writing. 3. Vernacular tongue and grammar. It is asserted in addition that every thing can be taught in the same way, geography, history, languages, composition,

oratory, mathematics, drawing, music, dancing!!! All this with a single text book, which is Telemachus, although any other widely translated book would answer. Hamilton used the Bible.

Jacotot began to teach on this plan in 1818 in the Netherlands, where he contrived it in order to teach the French language to the Dutch, although he could not speak Dutch! but has since applied it to every kind of instruction. In 1826 he became the subject of attention, and in 1828 his method was spread through France. Wonders are related of it, in Lyons a whole school was taught to read and write in 15 days! and in 8 months the whole course of education was completed, by a single book! who can believe this?

The principles of Jacotot are chiefly

1. God has endowed the human mind with the power of self instruction—True.

2. The child is to speak what he learns, the teacher to listen and direct—This is done in the Rensselaer school, and many others.

3. A constant repetition of the first words and things learned, is required—This is parrot like.

4. It is needful to commit to memory the 6 first books of Telemachus, word for word without a blunder.—Absurdity!

5. Intelligence is the same in all beings, and therefore the aptitude to learn—Quite false.

6. The improvement of man depends on his will and exertions—But it is also limited by circumstances and physical organization.

7. Every scholar must believe no one born superior to him, and that he is capable to learn any thing by himself—This is faith and pride!

8. Scholars must be praised for their exertions, but no rewards given in schools for better capacity, or efforts, as they are insults on others.—Then emulation is to be destroyed!

9. Nothing else is to be praised but exertions, patience, docility, labor, and virtue.—Thus attention, quickness, good behaviour, cleanliness, care of books, &c. will deserve no praise!

10. Elocution and composition, find all models in Telemachus!—Nonsense!

Every new system is not therefore an improvement. This appears egregiously ridiculous, and calculated at best to make children mere parrots. To teach every thing by Telemachus or any single book, is like teaching geography and history by walking the streets of a single city.

Telemachus may be used to teach spelling, reading, writing and languages like any other spelling book; but other books are required to form the style and clothe the mind. The only useful result likely to come out of this *monobiblic* system, will be that many books shall be translated word for word in interlines, a valuable requisite to understand languages and grammars. We ought to begin by the bible which has never been yet thus translated, although often proposed.

BENJ. FRANKLIN, JUNR.

#### 89. IMPEDIMENTS TO KNOWLEDGE, LITERATURE AND SCIENCE, IN THE UNITED STATES.

They are so many that a volume would be required to state them at length: we can merely enumerate a few and leave them to the painful reflections of liberality and patriotism.

1. There are no patrons of literature and learning as in some other polished and wealthy countries.

2. Booksellers who are become such elsewhere, do not deserve that name here. Few copyrights are bought except from men of popular fame.

3. This popular fame is not acquired by modest worth or plain merit, but by puffing chiefly.

4. In England patronage, cringing, and flattery are needed to help authors. In France and Germany some merit, besides cabals and intrigues. But here much noise, scribbling, puffing and recommendations.

5. Authors despising these means, have no chance of success whatever be their merit. The best men and writers must use them when beginners.

6. Thus booksellers are enabled to puff and sell the trash they deal in, and pamper or feed the depraved taste of misguided readers: while good books are neglected or not even known for lack of puffers.

7. Reviewers are seldom impartial, being guided by prejudices, predilections and venality.

8. Authors venturing to publish their own works, must pay a tax of 50 per cent to booksellers, or make the public pay it by adding it to cost which is 100 per cent on first cost.

9. A book costing \$1, that could be afforded at \$2, must be retailed at \$3, to enable the bookseller to get their third, or \$1 commission without any advance.

10. The interest of money, advertisements, postages, &c. often absorb most of the publisher's or author's profits.

11. The booksellers take little or no trouble with books not their own, they do not even show them unless asked for, and hide them in lofty shelves. Their desks are filled with novels and trash, good and rare books are kept out of sight.

12. Few booksellers have any capital, they deal chiefly on credit or commission, yet pay high rents

for fine stores to make a show, and thus the trade is not safe.

13. If honest men of some capital, and willing to make only 20 per cent per annum in it, were to enter this line of business, a brisk trade could begin under much safer and auspicious terms.

14. A tax of 10 to 20 per cent for advertisements and puffs is required to make any book known, including a copy as a bribe to each editor and reviewer.

15. The taxes on postages amount almost to a prohibition of the sale and transmission of books not periodicals, and of remittances of small amounts.

16. On books published by subscription, a heavy tax of 20 per cent is required to pay those who solicit them, and 5 to 10 to collect the money.

17. Men of Science and learning are neglected by the States and Federal Governments; they are but seldom appointed to stations of trust or profit, although they might be well qualified to become Indian Agents, Commissioners, Consuls, Judges, Postmasters, Agents abroad, Surveyors, Surgeons, &c. according to their advocations, since all learned men are here compelled to follow several pursuits.

18. It is not even the most learned that fill the literary offices in Universities, Colleges, Schools, and Libraries. Three-fourths of the professors, teachers and librarians are mere scholars or plodding men; while the majority at least ought to be men of learning, erudition, science, or genius, to give tone and character to our country.

19. Wealthy men neglect knowledge likewise, very few are to be numbered among authors and patrons. While the less wealthy are impeded by lack of free schools, cheap instruction, large libraries or good and cheap books.

20. Except in a few cities, physicians and lawyers are afraid to appear too learned for fear of losing

some of their practice: although they ought always to be respected and rise in proportion to their knowledge and eminence.

21. Many young friends of science or the muses are discouraged by these impediments, their genius is cramped or asleep, they neglect the path to eminence, and prefer a servile plodding life.

22. Out of nearly 50,000 men who have been members of congress or state legislatures, hardly 50 could be mentioned that have been eminent for great knowledge, science, or philosophy, and only 200 who have been eminent orators or improvers of laws, all the rest were partizans, or lawyers, political scribblers, demagogues, sycophants of the people or office seekers.

23. Except Jefferson, Franklin and Clinton, hardly any other very eminent man has reached the executive chair of the states or the nation.

24. Among farmers and mechanics, the bulk, bone and sinew of society, few have attained eminence. Fulton, Evans and Whitney were discouraged by difficulties.

25. Patents, the reward of ingenuity, are useless or nominal: they are purchases of law-suits, since if very useful they are stolen, and if of little use become worthless. This could have been avoided by a previous enquiry and decision on their validity and novelty.

This sad and appalling picture, must cause some painful reflections, we forbear to state them, they will easily suggest themselves. Let us rather enquire if this state of things cannot be amended. We fear not speedily nor adequately; but *nihil desperandum*.

*First Corrective.* As long as we shall have many citizens depraved by intemperance, notorious vices, bad habits, and ignorance,—even of reading and writing....and thus easily led by vicious propensities and designing men, we cannot hope to be a perfect people; but we may

gradually improve by increasing the means of instruction. All voters for instance ought to be able to read and write!

2. As long as slavery and degradation shall exist on this boasted free soil, or a large population be degraded by oppression or else profound ignorance, we cannot even claim to be on a level with those nations that are free from this blemish, which debases both freemen and slaves. But we may gradually change slavery into vassalage, educate every freeman or leave the remedies to those who feel the evil.

3. The monopoly of the booksellers ought to be checked by introducing the hawkers in competition as in France.

4. Their actual practice of republishing only English books to save copyrights, or only a few novels, idle tales, biographies, travels, children and school books besides, may be checked by patriotic associations for publishing nothing but American works.

5. Associations of authors, printers and friends of the country might be formed to form a fund by subscription for this purpose, or to loan funds, to be repaid out of the gradual sales.

6. Agents might be established in every town and village to sell these American works at 10 per cent commission, like every other manufacture, but to prevent collisions these agents ought to sell none but such American works.

7. Authors ought to agree to put no books into the booksellers hands, unless bought, at a discount leaving them from 40 to 60 per cent profit! Surely enough!

8. Wealthy or influential men ought to feel a national and rational pride in fostering American talents and genius wherever met, even under a modest garb.

9. Station of trust or profit, and above all literary stations and collegiate chairs ought always to be given

to the most worthy by public competition.

10. The last remedy which we venture to suggest, consists in trying to induce our most ingenious men to endeavor to discover a mode by which a few copies of a work may be printed *as cheap per copy* as when many are printed. Although we cannot now see how this can be done, we know that almost nothing is impossible to modern mechanism and ingenuity. Stereotype printing has enabled to multiply still more impressions it is now required to simplify it by machinery so as to print a few copies at a time whenever required. We have already seen a machine by which a man could print as fast as he could write. If this could be improved and print 10 or 20 or 50 at a time, the discovery would be completed. Its advantages would be incalculable, since it would no longer require a large capital to print a work, but small editions might be printed as often as required.

The inventor of this oligotype printing would deserve ample fame and reward.

B. FRANKLIN, JUNR.

#### 90. ANCIENT MONUMENTS OF CENTRAL PENNSYLVANIA BY MAJOR ADLUM.

Western Pennsylvania has several Ancient Monuments (similar to those of Ohio and West Virginia) near Pittsburg, Meadville, the Monongahela, &c. which are already described; but it was not known that any existed also in the Alleghany mts. Major Adlum who was long a surveyor on the waters of the Susquehannah, furnished me in 1825 with an account of several which he explored between 1792 and 1800 while the country was yet a wilderness. They must have belonged to the oldest Indian tribes of this state, since the villages of the Lenaps who dwelt in E. Pennsylvania are now quite obliterated, being built of less solid materials. C.S.R.

1. E. of Loyalsock creek on the N. side of the W. branch of Susquehanna, elliptical circus or fort, 80 yards long, and 60 wide, ditch outside, parapet inside, gateway S. leading to the river, on which bottom it is.

2. One mile N. side of Pine creek on the W. branch of Susq. R. remains a town, surrounded by a semi circular ditch outside, parapet inside one side straight and 200 yards long, the other curved.

3. Forty rods from Tioga R. on the top of a hill, just at the New York line, oblong square fort 80 yards long, 60 wide, ditch outside, parapet two feet high. Inside several circular holes or foundations of houses.

4. On the great flats of Tioga R. a circular town.

5. At the Shawani flats near Wilkesbarre, remains of the Shawani town, or earlier remains perhaps.

6. At the fork of Black lick and Conemaugh R. a square foot of two acres.

7. Near Milton on W. branch of Susq. R. a square mound of stones, 30 feet long and broad, 8 feet high, with soil and trees on it.

8. On the N. side of Nittany mt. on the path to Bald Eagle nest, a round stone mound 7 or 8 feet high.

9. On Broad mt. between reading and Sunbury another similar stone mound, same height.

#### 91. ANTIQUITIES OF EAST VIRGINIA BY COL. MEAD.

In 1824, Col. David Mead of Jessamine county in Kentucky, a venerable man born in Virginia in 1744, communicated me some account of the Indians and antiquities of lower or Eastern Virginia.

1. There are some small Indian mounds on James' R. near Monacan 25 miles above Richmond, which have been graves; they are of earth, without any stones.

2. A few similar mounds are found

below Richmond, but many more plain Indian graves: the bodies are only one foot under ground. Skeletons of women have been found with necklaces of Buck's horn beads. Many arrows and broken earthenware are found in ploughing.

3. All along the sea shore and banks of large rivers are found many large heaps of shells, oysters clams, muscles, scollops, &c. evidently made by the Indians. They are irregular, 2 or 3 feet thick, covered by a thin soil, the shells are bleached and partly broken. The immense number and extent of these heaps indicates a large population feeding on shell fish.

#### 92. AMERICAN HISTORY.

*The last indians of Virginia, by Col. D. Mead.*

In 1727 the state line was run by Col. Byrd between Virginia and North Carolina from the sea to the Blue Ridge. At that time the following nations existed yet.

1. The Nottoways who had a large village on the Nottoway R. a branch of Roanoke R. and near the line. They attended the survey, and soon after many joined the Tuscaroras, to whom they were related by language, and in 1776 emigrated north with them. In 1820 only 27 individuals remained occupying 7000 acres of good land on the Nottoway River.

2. The Meherrins. 3. The Sapponis—on rivers of the same names, branches of the Roanoke, near the Nottoways in Virginia; they were already reduced to a few men in 1727, and became extinct in 1750.

4. The Tuscaroras dwelt yet on Dan R. N. Car. or 70 miles from the sea in 1727: they had a town till 1766 when they sold their lands and went to join the Iroquois, to whom the main body had gone before after the war of 1722.

5. Saura or Sara or Cheraw, upper and lower town, 2 towns in N. Carolina 150 miles from the Tuscaroras; they existed yet as late as

1788, when they joined the Cherokees.

6. Nansamonds or Nansamongs, dwelt in the county bearing their name in Virginia. Towards 1740 they joined the Tuscaroras. As late as 1750 they used to fish and winter in Nansamond cy.

7. Pamunkeys, dwelt on Pamunkey R. They are there yet, reduced to a few individuals in 1822. One of them was put in a cage or round house for theft at Richmond, he was very strong and outrageous. A few Nottoways and Pamunkeys wander occasionally through the streets in a degraded state. They have but seldom intermarried with negroes.

#### 93. THE LAST INDIANS OF NEW-JERSEY.

In 1802 and 1830 I collected the following information in New Jersey.

The last tribes that remained in the state after the treaties and great emigration of the Raritans, Minisinks, &c. or Northern Indians, in 1758 and 1760, were the following.

1. Manahoking tribe on Manahoking bay now Little Egg Harbor.

2. Malicas, on R. ditto, now Little Egg H. R.

3. Mantas on Ancocus creek.

4. Monolapans on R. ditto now Cranberry R.

All these were fragments of the Naraticong tribe of the Nanticokes of South New Jersey.

They gradually concentrated themselves near Absecum or Great Egg Harbor, and on Balsto R. now Egg Harbor R. at the head of which was their largest village of Shemung, or Chemunk where they dwelt peacefully during the war of the revolution on their reserved land.

Shemung was in the Pine barrens, between Atsion and Tuckerton. The Indians had become christians, they were good neighbors, peaceful, never broke their word and all spoke English. They manufactured baskets for sale and would cut willow

twigs any where, which they did not deem stealing, but was not liked by the whites. They often intermarried with the whites, but seldom with negroes.

Although their lands and reservations were unalienable and secured for them in trustees hands, they felt their situation uncomfortable, their land being very poor. Therefore they often applied to the legislature to allow them to sell and buy better lands among the Oneidas of New York.

After many applications and refusals, because all did not agree to the sale, the legislature of New Jersey in 1805 allowed them to compromise, and either go or stay. About 120 sold their shares of the lands and removed to Shemung or New Stockbridge among the Oneidas, led by their Sachem Jacob Skiket, who had been educated at Princeton: Some of them had white women for wives who went along. About 25 refused to go at all and remained on small farms. Of these only 6 remained at or near Shemung of New Jersey in 1830, who work and hunt on the Pine barrens. A few others are rambling through the state, they sometimes come to Philadelphia on a visit, and dress like us.

C. S. RAFINESQUE.

#### 94. Description of an ancient Mexican Historical manuscript.

By Professor C. S. Rafinesque.

This singular manuscript is preserved in the library of the Philosophical Society of Philadelphia, and is a fac simile of another in Mexico. It was sent I believe by Mr. Poinsett.

It forms a roll about 10 feet long and 8 inches wide, divided into 30 compartments or scenes or events; from right to left the principal names have been added in our letters.

It appears to relate to some of the earliest migrations of the Mexican nation, since it begins at a navigation by water and terminates at a third Colhuacan, a place of note in early



Mexican History. The times are denoted by feet or steps or else by signs of years; but the chronology is rather confuse and obscure.

There is no connected similarity between this historical table and that of Siguenza published by Gemelli, although they begin and end nearly in the same way. Pantitlan and Chapoltepec are the two only similar places in both.

Siguenza famous table relates to the migrations of the Aztlaneas or Aztecas from Aztlan to Mixuahcan, with a chronology of 1608 years at most. This appears to relate to some other tribes of Colhuacans with a chronology less extensive and regular.

To give a full description and comparison of these two interesting manuscripts, with explanations and translations would require a memoir. It is chiefly my intention at present to draw attention on them and suggest a few remarks, on some of the scenes.

First scene, event or place. *Ilhuittl Cacan Chiamoztoc*, (Ilhuittl means the sky or celestial.) This event is represented as in Siguenza by a square sea with a boat, but instead of a man laying down in the boat, are two men standing and paddling, which evidently alludes to a voyage by sea and from the East or through the Atlantic. There is besides a teocalli, temple or island in it, with a tree on it, but no bird; and two men below outside one sitting and one kneeling. Date 3 years or balls.

2d. scene. *Panhuatague*. Dates 1 year and 3 feet or steps probably meaning stations of migration.

3. First *Colhuacan* (meaning holy old place,) this is the name given by the Mexicans to the immense ruin of Otolum near Palenque. It is figured by a mountain like a phrygian cap, with 9 tongues or people and 8 speaking sitting men or tribes in a row, 6 steps &c. 3 sheaths or ages next.

4. *Chimatlan*. 5. *Quetzaletl*.

6. *Cuauheohuittl*. 7. *Cohuatl*. Four travellers with loads, a step under

each and between each, thus 7 steps or feet or stations.

8. *Onca quitlamanlique nyzcoatl*. A tree, a teocalli, a danse of 5 men, 5 years, 4 steps.

9. *Oncan quinnotz nyzcoatl*, two men, 7 steps 2 before, 2 above, 3 after.

10. *Cueztecatl Chocayan*. 2 cones a man speaking 3 steps.

11. *Cohuatl Camac*. An alligator 4 steps.

Here begin the astronomical cycles of 13 years, figured by symbolic squares. From 12 to 16 scenes nameless.

12. Four men or tribes sitting, 28 years.

13. Four men in a square, 7 steps 24 years.

14. Ditto, 4 steps, 10 years.

15. Ditto, a cornucopia, 3 steps, 5 years.

16. Ditto, 5 years, 3 steps, 4 men beyond.

17. A cone, a sword, 3 tongues, 12 years.

18. Four men, 3 steps, 4 years.

19. *Azcapozalco* (well known city) 4 men, 4 years, 5 steps.

20. *Acalhuacan* or the second *Colhuacan*, 4 men, a spade, 4 years, 4 steps.

21. *Ecatepec* (wind Hill) cone, 4 men, 3 steps, 4 years. Second part 4 men, 3 steps, 8 years.

22. *Cohuatitlan* (snake place) Snake, 4 men, 5 steps, 20 years.

2d. part 4 steps, 4 years.

23. *Teopaiocan*. Cone, sword, 3 tongues, 4 men, 3 steps, 4 years.

24. *Pantitlan* (passage place) divided in 6 parts, all with the 4 men or tribes as usual. 1 has 3 steps, 4 years. 2d. 3 steps, 8 years, and here appears the first symbol of a king sitting. 3d. & 4th. each 3 steps 4 years. 5th. has a sheaf or age of 104 years, 8 years besides & 3 steps. 6th. 4 steps, 4 years.

25. *Atlacuihuacan*, 3 steps, 4 men, 4 years.

26. *Chapoltepec* (Locust hill) 4 steps, 4 men, 20 years, 5 steps. 2d. part below 6 steps round a circle,

2 men kneeling to 2 men sitting, 5 sheaths or ages of 520 years.

27. *Chimalazotl*, 3 steps, a warrior leading a slave.

28. *Huitzilihuitl*, 3 steps, a warrior leading a slave to the king *Coxcozth* sitting. This is the *Coxcoz* of Aztecas to whom they become slaves, and therefore these annals refer to those tribes who enslaved them, under *Cuxcoz* 14th king of the Chichimecas or Acolhuans.

29. Third *Colhuacan*, a mountain, 2 steps, 4 years, 2 men, a vase between them.

30th and last scene or event. Nameless. Three kings sitting, 2 steps, several men, a cone below. End of the whole 3 men and 2 soldiers with swords and tongues.

The whole number of computed years from the 12th scene, amounts to 816 years before the subjugation of the Aztecas and the building or occupation of the third Colhuacan the date of which is in 1314, therefore the beginning of these annals go to the year 498 of our era; but how much earlier in the previous ages is uncertain. It appears that they dwelt 3 ages or 312 years in the first Colhuacan. If the feet or steps denote times or cycles the chronology would be changed and increased. It is desirable that this manuscript should be engraved.

## 95. PERUVIAN HISTORY.

*Table of the successive Dynasties and Incas of Peru.*

This is an extract from my history of the Americans, the authors consulted are chiefly Herrera, Lavega, Acosta, Laet, Valera, Gomara, Polo, Amich, Touron, Garcia.

1st Period. Theogony. 1 God or triad. Pachacamac (world soul) or Pachayaca (world heavenly) or Achachic (celestial creator.)

2. Mamacocha or mother ocean

3. Pachamama or the earth, properly world mother.

4. Apuinti, or the sun, properly father lord.

5. Churi-inti, or son of the sun.

6. Inti-vauqui, or brother of the sun. These 3 deities form a triad or trinity called Tarigatanga, being 3 in 1 or 1 in 3.

7. The moon or Cuilla.

8. The Iris or Alla, Yllapa.

9. God of thunder, air, and wind, Chuquilla.

10. The stars, Chillay, Aclla, the chief Chasca is Venus.

11. Apachitas or tops of mountains.

12. Conapas or Malquis. Spirits, Cupay or Supa is the Devil.

2d Period. Antidiluvian dynasties of Ayar. 1. Cacha. 2. Uchu. 3. Sanca. Great flood of Mamacocha (mother ocean.)

3d Period. Of legislators and conquerors.

1st Dynasty. Collas.

2d Guancas.

3d Xauxans escaped from the great flood in the mts of Xauxa and Collao, part of the Ritisuyu or mts of snow. Xauxan D. lasted till 1534, last king was Atoya.

4th. Zipanas, of the Collas.

5th. Cagnas, Queens who conquer the Zipanas.

6th. Chon or Con, legislator came from the North, with a nation of white bearded men, who built Tiahuanaco.

7. After a second flood Intillapac, the last king of Tiahuanaco, divides his empire into 4 kingdoms for his 4 sons.

Manco, king of the North.

Colla, of the South.

Tocay, of the East.

Pinahua, of the West.

8th. Cara or Cari, or Pachacam, who came from the South



conquers Tiahuanaco, the Chöns banished.

9. Tice or Viracocha I. (man of the sea,) legislator come from the south: since worshipped. Al-cavica was king of Cosco.

10th. Viracocha II. Another legislator, came by sea and driven away to sea by the Cagoas or Canaris.

11th. Cagnas queens again in E. Peru. Chapera last 1538. Chimú in W. Peru, lasted till 1408. Chancas in central Peru the last king Hancobuallu leaves Peru in 1350.

12th. Cari and Chipana or Capanac, two kings of the Collas, begin new dynasties towards 840 of our era, and are at war for 400 years till both submit to the Yncas

13th. Tocabo or Royal line, descended from Manco. Several kings mentioned, who reign in N. Peru over the Yuncas, first king Chinchá Camac, a legislator, all the kings called Chinchas and Mancu. Rimac was one deified. Cocapac was king towards 1050. Towards 1380 two kings, Chuqui became vassal in 1388, Cuyz in 1402.

4th Period. Dynasty of the Incas or Yuncas or Yncas, or Ingas or Inguas.

1. Guanacaure or Ayarache, of Tocabo race, king of Pacaritambo, his queen Ragua, towards 1080.

2. Aranca, king of Tamboqui-ro towards, 1090, queen Cona.

3. Manco I. or Maneo Capac, brother of the two last, becomes king of the Quichuas, and built Cusco town 1100. His queen Oello or Colo. His posterity Chima.

4. Sinchiroca, son of 3, in 1137 Queen Cora or Achiola, progeny Raura.

5. Yupanqui I. or Yacargua-gue or Lloque, nephew of last, in 1167. Queen Cava. Progeny Huaynana.

6. Mayta Capac in 1197. Queen Cuca. Progeny, Urca-mayta. Begins to extend the empire greatly over Peru.

7. Yupanqui II. or Pachuti Capac in 1227. Queen Cury llpay. Progeny Aumayta.

8. Yupanqui III. or Roca, in 1527. Queen Micay. Progeny Vicaquirau or Vizaquimo.

9. Yupanqui IV. or Yahuarhu-acac in 1305. Queen Chiquia. Progeny Aylli.

10. Viracocha in 1315. Queen Runtu. Progeny Cozco.

11. Urco in 1372. Tyrant so worthless as to be omitted by many, deposed.

12. Pachacutec or Manco II. or Titu-capac, in 1375. Queen Huarca. Progeny Incapanaca.

13. Yupanqui V. in 1425. Qu. Chimpu. Progeny Incapanaca II.

14. Yupanqui VI. or Tupac Yaya, in 1450. Queen Oello. Progeny Capac.

15. Huayna Capac in 1481. Several queens Pileu, Riva, Run-tu, Toto. Progeny Tumipampa.

16. Huascar or Inticusi huall-pa in 1523. Queen nameless. Progeny extirpated. Deposed by

17. Atahualpa his brother in 1526. Usurper, was king of Quito, killed by Spaniards in 1533.

*Second Series of Incas after the Spanish Invasion.*

18. Toparpa or Atahualpa II. set up by the Sp. in the N. 1533.

19. Aticoc, set up by the Qui-tans, nominal for a few days 1533.

20. Quilliscacha, killed by Ruminavi in 1534.

21. Ruminavi, in 1534, inde-

pendent in the Andes for several years.

22. Manco III. son of Huayna, rightful Inca in S. Peru, from 1533 to 1555, called Elinga by the Spaniards.

23. Sayri tupac his son 1555 to 1561. Diego of Sp.

24. Cuzititu his brother 1561 to 1569. Philip I. of Sp.

25. Tupac Amaui I. his brother, 1569 to 1578. Philip II. of Sp. all independant of Spain, in Vilcapampa; last beheaded.

26. Paullu I. Christobal of Sp set up by them at different times in opposition till 1576, was son of Huayna.

27. Paullu II. Carlos of Sp. his son, from 1576 to 1586.

28. Paullu III. Melchior Carlos son of last 1586, exiled to Spain in 1602, dies there of grief 1610. *Interregnum, but Incas acknowledged secretly by the Peruvians.*

29. Mangore 1674, revolts in the Andes.

30. Torote, secretly from 1712 to 1737, became independant in Andes till 1740.

31. Apu or Huaynacapac II. Juan Santos of Sp. independent in Andes from 1742 to 1755, when sent to Spain.

22. Tupac Amaru II. Cordodanqui of Sp, independent in the South from 1780 to 1782.

33. Tupac Amaru III. his brother and successor 1782.

34. Pumacagua, revolt in 1813.

35. Manco IV. or Yupanqui VII. was Inca Protector General of the Indians appointed by Patriots in 1818.

36. Lauricocha, short revolt in 1828.

The series of Spanish kings and viceroys of Peru belongs to the colonial history, the series of late independent rulers and presidents of Peru and Bolivia, be-

longs to their late independent history. *C. S. Rafinesque.*

#### 96. AMERICAN LANGUAGES.

##### WAHTANI or MANDAN.

The vocabularies of languages collected by Lewis and Clarke, in their memorable journey to the Pacific Ocean, appear to have been lost and never published. It is said they were put into the hands of Dr. Benj. Barton, who made no use of them; since his death they have disappeared, and cannot be traced any where.

I met in Lexington, Ky. Mr. George Shannon, who was one of the companions of Lewis in that voyage, and who furnished me with some words of the Mandans on the Upper Missouri, who he said call themselves *Wahtanis*, these added to a few scattered in Lewis' Travels, form the following 32 words.

<i>*Father</i>	Papa
<i>Mother</i>	Nayeh
<i>*Man</i>	Numakeh
<i>Woman</i>	Mikheh
<i>Water</i>	Minih
<i>God</i>	Hupanish
<i>Hill</i>	Naweh
<i>Village</i>	Ahnaah
<i>Meat</i>	Mascopi
<i>Corn</i>	Cohanteh
<i>Cold</i>	Shinibush
<i>White</i>	Shahar
<i>Black</i>	Sahera
<i>Red</i>	Nopa
<i>Knife</i>	Maheh
<i>*No</i>	Nicosh
<i>Big</i>	Ahinah
<i>Little</i>	Hami
<i>Fox</i>	Ohhaw
<i>Cat</i>	Poscop
<i>Wild Sheep</i>	Ahsatah
<i>Mocasin</i>	Orup
<i>Wolf</i>	Shekeh

1 Mahanah	6 Kimah
2 Nupah	7 Kupah
3 Nameni	8 Tetoki
4 Topah	9 Macpeh
5 Kehun	10 Pirokeh.

The 4 words marked \* have some analogy with the English, through remote courses as usual, equal to 12 per cent. of mutual affinity.

This language is totally new to the learned, it is found in none of the great philological works. It is stated by Lewis to differ widely from the Minitari, allies and neighbors of the Mandans, although a dialect of it; both are referred to the great Pakhi family of the North, themselves a branch of the Skereh or Panis group of nations and languages. But this surmise appears to me erroneous, I can see but little analogy with the Panis and Ricara dialects; but instead, many similarities with the Yancton and Konzas dialects of the Missouri tribes. The Wabtasuns or Ah-nahaways of Lewis, called Aya-wahs by Shannon, are a branch of the Otos and Ayowehs of lower Missouri, although settled near the Mandans, and speaking an akin dialect.

The word mini for water is found in all the Missouri tribes. In comparing the 10 Mandan numbers with the list of decimals in 50 N. A. dialects in Tanner's Narrative, the greatest amount of analogies are found in the

Konza 1. Meakche, 2 Nonpah, 3 Topah. Analogy 30 per ct. nearly the same in Omawah.

Yancton 1 Wanchah, 2 Nonpah 3 Yahmene, 4 Topah. Equal to 40 per ct. the same in the Dakota or Sioux.

Minitari 2 Nohopah, 3 Nahme, 4 Topah, 5 Chehoh, 6 Acalme, 7 Chappo. Equal to 60 per cent. of analogy.

While the Pani has only 10 per cent. of analogy by the single number 2 Patko. The Muscogih so far to the S. E. has even more

or 20 per ct. in 1 Homai, 10 Pekole; but they are very remote.

Mr. Catlin, who has visited the Mandans this year, 1832, says they are properly called *Siposka-nukaki* meaning people of the pheasant! thus we have 3 names for this nation, this is not unusual, each nation having many nicknames in N. America. He says they are reduced to 1800 souls, and that the Minitari speak a dialect of the Upsaroka or Crow Indians.

#### C. S. RAFINESQUE.

#### 97. LANGUAGES OF OREGON.

##### CHOPUNISH AND CHINUC.

Mr. Shannon confirmed the fact that only 3 languages were met with in the Oregon mts and country. 1 The Shoshonis in the mts, 2 Chopunish from mts to the falls of the Oregon or Columbia R. 3 Chinuc from hence to the Pacific Ocean. But they are spoken in a multitude of dialects.

The Shoshoni is pretty well known to be a branch of the Alietan or Western Skereh, spoken as far as Mexico. The other two are less known. Mr. Sh. could only furnish me 12 words of Chopunish, a few more met with in Lewis and Cox enable me to give 24 words of it.

<i>Sky</i>	Tetoh
<i>Water</i>	Mekish
<i>River</i>	Ishkit
<i>Land</i>	Kaimo
<i>†Father</i>	Papa
<i>Son</i>	Illim
<i>†Sun</i>	Spokan
<i>†Faraway</i>	Wayot
<i>†Nose</i>	Nashne
<i>Arm</i>	Tunashe
<i>†Lead, top</i>	Chop
<i>Flat</i>	Unish
<i>Cut</i>	Pakehuk
<i>Broken</i>	Mutult
<i>Road</i>	Ahish
<i>Buffaloe</i>	Cokala
<i>Bear</i>	Yahar

<i>Fall</i>	Tim.
1 Nox	4 Pilapt
2 Lappit	9 Quis
3 Mutat	†10 Potemt

It is singular that this uncouth language has six analogies † out of 24 with the English, by primitive connection, equal to 25 per cent. It is therefore Asiatic like the Saca or old Saxon.

I am at a loss to refer it to any group of American languages, I had put it among the Wakash or Nutka group in my table; but it is widely separated from it. New to science as well as the next.

Of the Chinuc I have collected 33 words from Cox, Lewis, and other sources. Cox calls it unutterable and says it lacks F. V. R.

<i>Chief</i>	Tia, Taye
<i>Good</i>	Clouch
† <i>Cake</i>	Pacheco
† <i>Island</i>	Ela
<i>Gods</i>	Etalapass
	Etanemi
<i>Men</i>	Tillikum
<i>Give</i>	Pattach
† <i>I, me</i>	Maik
<i>There</i>	Kok
<i>Sit down</i>	Mittait
<i>I do not understand</i>	Wake Comatox
† <i>Whale</i>	Ecola
<i>Money</i>	Haiqua
<i>Beads</i>	Comoshuk
<i>Dog</i>	Camux
<i>Deer</i>	Mulak, Lap
<i>Bear</i>	Host
<i>Salmon</i>	Equannat
<i>Tobacco</i>	Quayenult
<i>Pipe</i>	Kulama
<i>Gun</i>	Sakqualal
<i>Blanket</i>	Poclishqua

The decimals I have in two dialects.

- 1 Ect, Icht
- 2 Moxt, Makust
- 3 Clunc, Thlown
- 4 Uct, Lakut
- 5 Quanim, qunam
- 6 Tuckum, Tackut
- 7 Sinanixt, Sinbakust

- 8 Stutkin, Stuktekan
- 9 Quayels, Quayust
- 10 Taittelum, Italilum.

The 4 marks † indicate 4 in 33 of analogy with the English, equal to 12 per cent.

3 words, man, 9 and 10 have a slight analogy with the Chopunish out of 9 in the two lists, which gives 33 per cent. of analogy.

North of the Chinuc and Chopunish are found the Wakash and Atnah tribes and languages, the last has many dialects connected with the western Lenilenap group and it appears that both the Chinuc and Chopunish have more analogies with them than with the Wacash; the word man is an instance and proof of it.

In the Wacash the numbers have some slight affinities with those of the Onguys and Wiyan-dots of the East, while in the Chinuc and the others, these decimals resemble the Shawani and other Eastern Lenilenap Dialects. Examples.

*Musquaki.* 1 Nekot, 4 Kot-wauskik, 5. Kotwauwa, 9. Shawunk. 4 in 10 or 40 per cent with Chinuc.

*Shawani.* 1 Nguti, 5. Ninlan-wi, 6. Kukatswi, 10. Matatawi, also 40 per cent.

*Mohegan.* 1 Ugwito, 5. Nunon 6 Ugwitus, 10 Netaumit also 40 per cent.

I conclude therefore that the Chinuc (and perhaps the Chopunish also) is one of the Lenapi-an languages of the West, one of the fragments of that vast ancient nation that has spread from the Pacific to the Atlantic Ocean in 200 Nations and tribes. The Ainus of Eastern Asia appear to be their ancestors.

C. S. RAYNESQUE.

## 98. GEOLOGY OF NATCHEZ.

The following information on the cliffs of clay on which Natchez is situated was imparted to me this year by Dr. James Smith of Baltimore.

These cliffs are about 220 feet high in 5 strata.

1. Soil 4 feet thick.

2. Marly clay 80 feet thick.

3. Bank of clay and shells 25 feet; the shells are of several kinds, chiefly a white univalve like *Helix* but larger, and a bivalve, both soft not flinty. The bivalve is a new *Diclisma*. *D. teres* Raf. Subcylindrical, 2 inches long, fulvous, breadth 1-3d of length.

4. Pure marly clay again 100 feet thick.

5. Bank of 20 feet down to the river shore, gravelly or clay mixt with rolled silicious pebbles. Many are of yellow Calcedony, black and red jasper, or some very curious stones, for instance.

Gravel stone with impression of wood on it!

Red and yellowish chert with impressions of shells.

Fragments of pumice stone.

Beautiful onyx pumice. Outward coat like iron grey hornstone, compact smooth without holes, one line thick. Inside porose light with unequal holes, of a fine purple with shining vitrified specks. Next a band of greenish and another rusty or brick color at the other end. Thus this fine stone has 4 colors, iron, purple, green, and rusty.

Fragments of pseudo volcanic glass. One somewhat like jasper was grey inside but shining black outside as if glazed.

## 99. Geological Remarks between Buffalo in New York and Pittsburg, in Pennsylvania.

By DAVID THOMAS.

Buffalo is on Lake Erie at the mouth of Buffalo creek, in a level rocky plain extending 16 miles E. The rock is limestone and horizontal, it extends to the Canada side where it is more broken. The valley of Buffalo cr. is wide and of yellow clay. The shores of Lake Erie is low, of miry clay, mixt with sand and gravel. Three miles from the creek the soil becomes firm, and wells are dug under it in slate. The first bluff on the Lake is also of this slate or argillite.

At eighteen miles creek, a thin stratum of limestone, which once overlaid the crumbling slate, has been broken into angular fragments with square edges to the margin of the Lake. The hills of slate begin to become steep; it is nearly black, resembling coal, but in thin lamina, some even flames in a hot fire, some are iridescent, or a yellow substance is found between the leaves.

Beautiful pebbles decorate the shore of the Lake, they are primitive fragments of many colors.

Springs of petroleum are found a few miles inland, and coal will perhaps be found hereafter.

Many bluffs project in the lake in deep water, yet it is said that formerly there was a passage or road at their foot, and that the lake has encroached there. Purplish ferruginous sand is found on the shore between them. The bluffs are slaty and hardly 100 feet high. Blocks of granite and limestone of many tons are numerous on the shore. Some singu-

lar limestone masses are seen, resembling huge fossils, like oblate spheroids of stratified lime, others 5 feet diameter and one thick with concentric circular ridges like a Boletus. The lime contains white and black crystals in the fissures, and the slate contains Pyrites.

Before Cattaraugus creek a tract of clay is found, with many ponds and sloughs. Beyond the creek the shore becomes very shallow, and with sand downs 50 feet high, formed by drifts, and as white as snow.

From Walnut creek to Erie in Pennsylvania, the road for sixty miles is on a broad ridge parallel with the Lake, but 2 or 3 miles distant, formed of loam and pebbles of mica slate. The first appearance of this primitive rock in place is at a quarry 12 miles from Cattaraugus nearly South, but the Chatauque mountains now in sight appear to be formed of it at their base.

At the Canadaway creek these mountains begin to run parallel with the Lake Ridge, 5 or 6 miles only from Lake Erie; on their top is the Lake Chatauque which empties the waters into the Ohio. They are the N. W. end of the Alleghanies as the Catskill mts. are their N. E. end. They are about 1200 feet high, and the small streams running from them to the Lake, are over the mica slate.

At the twenty-mile creek, the valley interrupts the mts. and on its banks horizontal strata of mica slate are seen 50 feet high above the water.

Here begins Pennsylvania.

As far as Erie, the Argillite covers the mica slate, which appears again near Erie where a

quarry of it is used. Boulders of granite are seen on the shore but no limestone.

It is 14 miles from Erie to Waterford on Lebeuf creek over the mountains. The road ascends for 8 miles over successive ridges, disposed like an amphitheatre, with steep slopes towards the Lake. These mts. extends S. W. into Ohio but recede from the Lake gradually. Lebeuf cr. rises in Pine swamps, and its waters are of a dark color. It empties into French cr. a large stream or rather river in a broad valley.

Meadville 40 miles from Erie is in a plain with a gravely loamy soil. Some granite boulders seen on the uplands.

Fourteen miles S. of Meadville ends the mica slate region and begins the sandstone region supporting coal, limestone and iron ore. The sandstone hills and ridges run from E. to W. and are 16 miles broad from N. to S. Some sandstone is white, quite crumbling and similar to salt. Some limestone strata of a bluish white are found. Scrubgrass cr. and Little Sandy cr. have iron beds.

The valley of Slippery rock cr. is S. of these hills, and opens to the W. The strata are horizontal. Limestone is seen below the sandstone, and coal near the surface.

Conoquenessing cr. has coal mines on its banks under clay slate. The valley has high hills on each side of quartzite grit with mica in it. Four kinds of iron ore found there honeycomb gravel, bog and metallic ores.

From hence to Pittsburg the country is very hilly, the sandstone, limestone, coal, and iron



are found every where, and on the top of each hill a kind of greasy ochraceous earth.

## 100. ORYCTOLOGY.

*Vulgar names of fossils and petrifactions in North America.*

The common names given to those objects by the illiterate and ignorant of geology throughout the United States, are of some importance, because they indicate or lead to detect the localities for fossils, as well as to correct the curious mistakes and misnomers of the vulgar language on that score. I have therefore collected several of the names which I have thus seen applied. The adjective appellation *Petrified* is commonly prefixed to all of them, thus

Petrified snakes, or coiled snakes are *Ammonites*.

Rattle snakes or petrified rattles are *Orthoceras*.

Petrified fishes are the inside of the same.

Petrified crabs and beetles are *Trilobites*, called snake heads when contracted.

P. turtles are *Septaria*.

P. butterflies are *Productus*.

P. wasp nests are *Favosites*.

P. buffaloe horns are large *Turbinolites*.

P. dog teeth are *T. cynodon*.

P. giants bones and teeth are *Mastodon* and elephants.

P. men's heads are *Nodulites* and *Pitheclites*.

P. knives or bills or penis are *Belemnites*.

P. roots and bark are *Alcyonites*.

P. brakes are *Filicites*.

P. screws are *Encrinurites*. P. buttons the same when the articulations are loose.

P. eyes or ringstones are *Cyclorites*.

P. stars or sea stars are *Pentacrinurites*.

P. stars or star stones are *Madrepores*.

P. corals and thimble stones are *Millepores*.

P. almonds are *Didyma* and *Nuculites*.

P. hickory nuts are *Pentremites*.

P. acorns are *Cupulites*.

P. elk horns are *Sommites*.

P. deer horns are *Mazamites*.

P. snails and cockles are univalve shells.

P. clams, muscles, oysters &c. are bivalve shells.

P. tongues are shark teeth.

P. walnuts or balls are *Botacrites*.

P. sponges are *Cavulites* or *Spongites*.

P. birds nests are *Antrosites*.

P. eggs or egg stones are *Geodites*.

P. fish roes are *Oolites*.

P. reeds or grass are *Coal phytolites*.

P. snake skin are *Lycopodites*.

P. nets are *Tesselites*.

P. sheep's horns are *Spirulites*.

P. needles are *Spinulites*.

P. olives and pecan nuts are spines of *Echinites*.

P. turnips are *Lamellites*.

P. chains are *Catenularia*.

C. S. R.

## 101. ANCIENT VOLCANOES OF NORTH AMERICA.—BY C. S. RAFINESQUE.

America will upset many of the theoretical doctrines of European Geologists, and so will Africa when explored by them.

The highest mts. were said to be of granit every where; but the highest in the world, those of

South America are of Porphry, those of Central Asia still higher are of stratified primitive rocks jumbled like marble paper.

The great geological question of the igneous or aqueous origine of the globe and the primitive formations is now pretty much at rest. It is become more important to ascertain the origine of the secondary formations, with their immense stores of life and organic remains, therein entombed.

The theorists once sustained that all the limestone had been made up of shells by compression although we have primitive and volcanic limestone without shells. Now they maintain that all the coal formations are made up of wood by compression, because the lignite is thus formed, but the primitive and volcanic anthracite and bitumite without any trace of wood upsets this theory also.

No one can be a good geologist without having seen volcanoes, or at least without having studied well their actual operations throughout the globe. After seeing the huge volcanoes of South America throwing yet streams of water, mud, clay, sand, marl, bitumite, pichstone, &c. instead of melted stones, while the same happens also in Java, Spain, Sicily, Russia.... Humboldt could well account for many ancient geological phenomena, and he was even led to surmise that the great Asiatic flood was caused by a volcanic eruption of waters from the Caspian Sea. If this should be confirmed by inspections, we may well surmise that our great flood of North America, traced by our diluvial formations, was also caused by eruptions from our great Northern Lakes.

Volney was the first to call Lake Ontario a volcano! and to notice our ancient mountain lakes now dried up, by eruptions or convulsions, each having a breach or water gap. I am induced to amplify his views by deeming nearly all our lakes, as many volcanic outlets, which have not merely thrown waters in later periods but in more ancient periods have formed nearly all our secondary strata by eruptions of muddy water, mud, clay, liquid coal, basalts trap. This was when the ocean covered yet the land.

Submarine or oceanic volcanoes exist as yet every where in the ocean, & their effects are known. They must of course be hollow outlets under water, that would become lakes if the ocean was dried up. We can form an idea of their large number and extent by the late but natural discovery, that all the Lagoon Ids, and circular clusters of Islands in the Atlantic, Pacific, and Indian oceans are volcanic craters! This is now admitted even in England, and the coral reef often crowning those clusters are later superincumbent formations by animals. The Bahama Ids in the Atlantic, the Maldives near India, and the Coral Ids. all over the Pacific are the most striking of these singular volcanic clusters, nearly at a level with the ocean. Some of them are of immense extent from 60 to 150 miles in circuit, or even more.

Some circular bays and gulfs of the sea appear to be similar, differing by having only one breach. The bay of Naples is one also, an ancient crater, with islands in front.

The analogy between lakes and volcanic craters is obvious. Al-

most all dry craters become lakes filled with water, when their igneous activity is spent.

All springs are smaller outlets of water, while the fumaroles and holes of igneous volcanoes, are small outlets of smoke, fire, air, gases, hot mud, &c. I can perceive no essential difference between them or any other eruptive basin, except in the degree of caloric or kind of matter which they emit. They may both be quiescent or in activity. Springs vary as much as volcanoes. We have few pure springs; they commonly hold mineral substances; they are cold, warm, hot, salt, bitter, saline, bituminous, limpid, colored, muddy; perpetual or periodical, flowing or spouting. Just like volcanic outlets.

Therefore volcanoes are properly igneous springs, and springs or lakes are aqueous volcanoes!

Under this view, we have no lack of volcanic outlets in North America, since one half of it, the whole boreal portion, from New England and Labrador in the East, to North Oregon and Alaska in the West, and from Lake Erie to the boreal ocean, is filled with them, being eminently a region of lakes and springs: covered with 10,000 lakes at least.

To these as well as to the dry lakes of our mountains, the limestone craters and sinks—may be traced as the original outlets of our secondary formations, in a liquid state under the ocean, imbedding our fossils. The basaltic, trapic and carbonic formations have the same origine, since they are intermingled. But some kinds of sands and clays have been ejected since this continent became dry land.

To trace all these formations to their sources, delineate their streams or banks, ascertain their ages and ravage on organized beings, will require time, assiduity, zeal, and accurate observations.

What connection there is between lakes or dry basins of primitive regions, and their formations is not well ascertained. Some are evidently the produce of crystallization; but others forming streams, veins, banks and ridges may have been ejected in a fluid or soft state before organic life had begun, and thus spread into their actual shapes. Many streams of primitive limestone, anthracite, wake, grit—are probably so formed and expanded. Hollows in the primitive ocean must have been the outlets of these substances, now become lakes after the land became dry.

The power which rises and ejects out of the bowels of the earth, watery, muddy and solid substances, either cold or inflamed is one of the secrets of nature; but we know that such a power or cause exists, since we see it in operation. Water rises in lakes and springs much above the level of the ocean, while the Caspian sea is under that level. There is then no uniform level for water on the globe, nor uniform aerial pressure over them. Another cause operates within the bowels of the earth to generate and expel liquid and solid substances; perhaps many causes and powers are combined there. Galvanism is probably one of the main agents. A living power of organic circulation, would explain many earthly phenomena.

The great astronomer Kepler and other philosophers, surmised that the earth was a great living

body, a kind of organized animal rolling in space. According to this theory lakes and springs would be the outward pores vents and outlets of this huge being, volcanoes inflamed sores and exuvia, water the blood or sap of the earth, mountains the ribs, rivers the veins. This whimsical conceit is not preposterous since we know of animals perfectly globular and somewhat like our globe, the *Tethya* and *Volvox* for instance. But it is only a theoretical surmise, I merely mention it as an illustration, and the conception of some great minds; perhaps a more rational idea than the theories deeming this globe a mass of inert matter, a globular crystal, or a hollow sphere suspended in space, or a rolling ball whirling round the sun.

## 142. MINERALOGY.

### *Oolites of North America.*

A great confusion has arisen concerning this mineral rock because scarce, denied to us by many who have not seen it, and mixt by others with chalk and grit under the name of Oolitic rocks.

Chalk is compact and white, not in round grains like the true Oolitic rock, it has not yet been found in America.

Limegrit or silicious limestone has grains of quartz bound by lime. It is a kind of grit or sandy rock, and not of Oolitic rock as erroneously stated by Eaton; it is not uncommon in the Alleghany mts. and West of them.

The true Oolitic rocks are calcareous and formed by globular grains or crystals either solid or hollow.

The true Oolite or Roestone

has those grains spherical, more or less hollow, commonly white. They have been mistaken for petrified roes of fishes by the vulgar, and by the system mongers who would not believe in round crystals. They are however perfect crystals of pure lime, conglomerated into extensive rocks and strata.

I have found it in South Kentucky, in the basin of the Cumberland R. (not the valley) S. of the Knobs between Glasgow and Bowlinggreen. It was perfectly white, the hollow grains of the size of millet. It is scattered on the ground in angular flattened fragments; but in digging for wells a thin stratum less than a foot thick is found above the compact limestone rock.

This formation must be connected with that of Tennessee, mentioned in the late geological map of that state, to be found in several parts of the S. Cumberland basin, and besides on the very top of the S. Cumberland mountains, overlaying there the gritty sandstone.

The other Oolitic rocks found in Europe are 1. The *Pisolites* or Peastone, with grains solid like peas. 2. *Meconites*, as minute as poppy seeds and nearest to chalk. 3. *Ammites*, from the size of a nut to 3 feet in diameter formed by concentric spheres united by rays. These are deemed organic remains by many near to *Ammonites* and *Numulites*. 4. *Granulites*. Round grains filled and bound by a silicious matter.

These have not yet been found with us; but Dr. Powells of Baltimore has shown me another, found by him in Pennsylvania, very near the *Granulites* but not silicious. It must form a 5th

Oolitic rock which I shall call

*Pantalites* or *Powelstone*. It is grey filled with minute bluish round oolitic spots not larger than millet, these round grains are solid: the general fracture is angular as usual. It occurs near Milton above the Red Shale, in large nodular masses in place, and also near Easton but in fragments out of place probably diluvial. Dr. Powell thought this the true Oolite, but it is quite different from it.

Oolites are also indicated as found in New Jersey, New York and Ohio, but unless properly described it is not possible to aver which kind is meant.

C. S. R.

#### 105. THE FISHES OF THE UNITED STATES.

Many splendid works have been published on our birds; but none yet on our beautiful and valuable fishes. I have long had in contemplation a general history of our finny tribes, after describing 100 N. Sp. of fish in the single river Ohio; but such works are not yet sufficiently patronized. Lesueur who had collected so many beautiful drawings of our lake fishes, has never been able to publish them. Dr. DeKay of New York once told me that he had begun a natural history of our fishes, which has never appeared. I am told that Dr. Holbrook of Charleston is writing the history of our Southern fishes. Much remains to be done in this branch of Natural History, and to prove it, it will be sufficient to state that I have discovered and figured already 300 N. Sp. and many new genera of fishes from the river Ohio and branches, Mississippi, Potomac, Susquehannah, Delaware, Hud-

son; and Lake Erie and other lakes, the Atlantic Ocean, &c.

In August 1831, in my fifth Zoological letter to Cuvier 2d series, I informed him that we had about 1000 species of fishes in our streams and lakes, of which 700 are yet undescribed, and I determined their stations as follows, dividing them into 10 ichthyological regions of fresh water, each having a peculiar generation of finny tribes.

1. Region. Of the Great Lakes St. Lawrence & affluent streams.

2. North Atlantic Region, from Maine to the Chesapeake, Hudson, Connecticut, Delaware and Susquehannah Rivers.

3. South Atlantic, from the Chesapeake and Potomac to Florida.

4. Florida streams and lakes.

6. Mexican gulf, streams and rivers of Alabama, &c.

6. Louisiana or Lower Mississippi, Red R. Arkansas, &c.

7. Ohio and branches, Tennessee, Cumberland, &c.

8. Upper Mississippi, Illinois, and branches.

9. Missouri & affluent streams.

10. Region of Oregon, in the R. Oregon and branches.

All these Regions have each at least 150 species of fishes, and deducting 1-3d from each for those few common to several regions, 1000 sp. will remain in the whole. The regions 4, 5, 6, and 10 are entirely unexplored by science.

To these 10 regions of fresh water fishes, we must add three regions for sea fishes.

1. Atlantic Region.

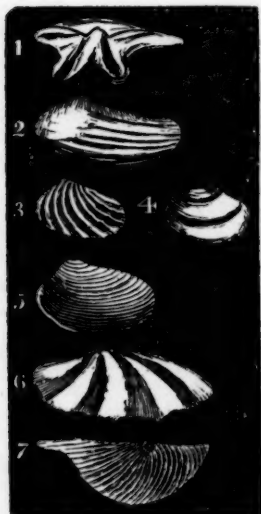
2. Southern Region.

3. Mexican gulf.

Each must afford 200 or 300 sp. many of which must be new,

those of the Mexican gulf have never been attended to as yet. Thus we have 600 to add to the 1000 above, and may expect to have 1600 sp. of fishes to describe and figure of which 1000 are new! to the science. Yet all are valuable, since they afford food, fisheries and sport.

C. S. R



104. *New Fossil Shells of Pennsylvania*, by C. S. Rafinesque.

Among the 40 N Sp. of Bivalve fossils found this year on Sherman cr. in the Alleghany mts. I select those which are unequilateral as the most curious, and I shall describe 10 of them giving above the figures of 7, ranged under 3 new genera. All are Inequivalve.

1. N. G. HEMISTERIAS Raf. Shell transversal with 2 wings thus unequilateral, hinge with two teeth and an angular sinus outside at the beak, margin lobed—*H. quadriloba* fig. 1. Four obtuse lobes and 3 obtuse

sinusses, lateral lobes like wings one much longer, an oblong furrow on each lobe, length half of breadth.

2. N. G. TELISTROPHIS Raf. Shell unequilateral transversal with one wing on the longest side, hinge without beak, streight with a round impression inside at the apex, margin unlobed—*T. torsala* fig. 7. Shell convex, minute longitudinal curved strias, short side rounded, long side with a twisted obtuse wing, length 2-5ths of breadth.... Impression in Petrosilex. one inch.

3. N. G. PLEURETERITES R. Shell unequilateral transversal without wings, hinge more or less curved simple or with a wrinkle and a beak, margin unlobed—The name means irregular sides, *Telistrophis* means spotted hinge, and *Hemisterias* means half starry.... 8 sp.

1 Sp. *Pl. lateristria* R. fig. 2. Shell oblong, small side smooth, longer side with 5 transversal furrows, axis far behind, length one third of breadth.... In petrosilex, one inch long.

2 Sp. *Pl. divisa* R. Shell oblong divided in the middle by a large furrow and small sinus at the end of it, 5 curved ribs on the small side, 7 on the large divided by deep furrows, small side rounded, longer attenuate, axis prominent submedial, length half of breadth.... In grey petrosilex, over one inch.

3 Sp. *Pl. anisocla* Raf. Shell swelled rounder, a deep furrow in the middle, 8 curved unequal ribs, 4 on each side, small side round, longer side truncate, beak prominent submedial, length 3-4ths of breadth.... In variegated petrosilex, about one inch.

4 Sp. *Pl. latitudata* R. fig. 6.



Shell oblong both ends obtuse, 3 or 4 broad waved ribs, margin flexuose, beak submedial, length 2-5th of breadth.... With the last larger.

5 Sp. *Pl. striata* R. Shell oblong, swelled both sides rounded, hinge flexuose by arched beak, equal longitudinal striae throughout, beak submedial, length half of breadth... In white sandstone, nearly two inches.

6 Sp. *Pl. bifasciata* R. fig. 4. Shell rounded swelled, smooth with two faint transversal bands or wrinkles, beak round lateral, length 2-3ds of breadth... In yellow sandstone, small, half an inch.

7 Sp. *Pl. concentrica* R. fig. 5. Shell oval, minute concentric striae, beak obtuse at 1-3, sides rounded, length 2-3ds of breadth... In petrosilex.

8 Sp. *Pl. obliqua* R. fig. 3. Shell oval oblique swelled, 8 curved oblique furrows, 3 and 4 on the sides of the middle one, beak prominent at 1-3, length 2-3 of breadth.... In grey chert or petrosilex, small half an inch, near to sp. 3, but less deeply furrowed not truncate behind.

#### 105. STRATIPORA AND FLEXULITES N. G.

These are two N. G. of fossil polypites of my cabinet. Both are from the fine fossil regions south of the Apalachian mts. where so many new shells have lately been found. They are not silicified.

1. STRATIPORA Raf. Mass of Basaltic angular cells like Favosites, but short not concamerated, top with several regular rows of equal round pores like Millepore each corresponding to a tube... Very singular N. G. with the general form of Favosite, and

the internal structure of Millepore tribe.

Sp. *Stratipora brevissima* Raf. Basaltic pillars not striated commonly hexagone, 2 opposite sides longer, even at top, but unequal in length beneath, forming an extended flattened level mass. From Louisiana near the River Teche, specimen 4 inches by 3, pillars from 1-4 to 1-2 inch long only, of a greyish color, marly smelling of clay but very hard, ceded to me by Professor Green, who deemed it wrongly a Tubipore.

2. FLEXULITES Raf. Body fixed obconic, outside with a thin tegument covered with flexuose wrinkles, inside solid filled with minute transversal flexuose fibres or striae.... Another very singular and anomalous N. G. akin to the Madrepores, but not stellated mouth, inside not radiated, but irregularly flexuose. Perhaps it is a fossil Porostome or animal without mouth as *Tethya*, &c.

Sp. *Flexulites haydeni* Raf. Body obconical truncate, subaggregate, outside flexules transversal, each raised and with a furrow on it, internal flexules intermixt becoming less near the surface.... Specimen 4 inches long changed into a silicious grey slate, upon a rusty slate, from the region south of the Apalachian in Alabama. Ceded to me by Mr. Hayden to whom I have dedicated the sp. C. S. R.

#### 106. NEW LIZARD FROM KENTUCKY.

It was observed in 1823, on the Knobhills of West Kentucky not far from the Mammoth cave. It is called scorpion and erroneously deemed poisonous, like most of our Lizards. It is ra-

ther sluggish and creeps on the ground, I did not see it on trees. I refer it to the Genus *Stellio*, but with some doubt, perhaps it might form a S. G. *Lopherpes*, R. by its flat body with scales not imbricated, and cylindrical tail with scales imbricate and carinate. *Lopherpes* means reptile of the hills.

*Stellio dicyanelis* or *Lopherpes dicyanelis* Raf. Head brown above, white beneath with some black dots, two large blue spots on the sides of the throat, back cinereous, two rows of large brown spots on the sides, belly white, tail a little longer than body ringed of brown and cinereous.

Length of the head and body 3 inches, tail 4, total 7 inches. Head and body flattened with small equal scales not carinate nor imbricate. Tail cylindrical with imbricate carinate scales. Feet long with some white and black lines behind. C. S. R.

107. *Twenty new genera of plants from the Oregon Mountains &c.*

By C. S. RAFINESQUE.

My friend Dr. John Torrey of New York is one of the best Botanists of our country; but he is so very cautious that he will not admit any improvement except after long delays and previous precedents. Thus he has hesitated to admit the natural method of Botany proposed by Adanson, Jussieu, and even Linneus 80 years ago, until the Linnean system was nearly given up in Europe, and discarded in England by Brown and Lindley within a few years. He employs the same caution with new G. and Sp. and hardly dares to propose any himself. Thus in his valuable account of the 491 plants collected in or near the Oregon mts. by Dr. James, published in 1827, he has described many plants in ambiguous

terms as dubious or under wrong genera, because he was loath to frame N. G. for them. As I have long ago established the principle that every object of nature must be properly located and named in Botany and Zoology, I have been compelled to rectify this omission by forming many N. G. and N. Sp. out of his plants, for my florula Oregonensis. They are.

1. *EPICOSTORUS* Raf. (meaning 20 on torus,) differ from *Spirea* and *Neillia*. Calix campanulate 5 lobed, petals none, stamens 20 inserted on a torus and nearly monadelphous at the base, pistil stipitate single, one style, one capitate stigma, capsul 3 seeded. *E. montanus* Raf. *Spirea monogyna* of Torrey sp. 119. his name implies a contradiction.

2. *PSYCROPHILA* Raf. (a G. not S. G.) Dec. of *Caltha*, more like *Scot-anum* Ad.) Sepals 9, stamens 25—30, pistils 12—15. *Ps. Sagittata*, or rather *Ps. auriculata* Raf. As I doubt whether the Oregon plant can be the same as that of Falkland Ids. *Caltha Sagittata* Dec. T. sp. 8.

3. *ISOPARA* Raf. *Cleome* Raf. Dec. T. Sp. 24. inadmissible G. diminutive of *Cleome*. *IMexicana* R.

4. *CUBELIUM* Raf. 1817. my previous and better name for the *Viola concolor* must prevail over *Solea* of Ging. T. sp. 26. there is besides a G. of fish *Solea*. *Cubelium* was an ancient name of a violet.

5. *DIMENOPS* Raf. The G. *Krameria* must form a family, and the anomalous sp. as many G. The *Irina* has 4 sepals, the *Stemeiena* only 3 stamens. This G. sepals 5 unequal, petals 3 unequal, 2 lunulate, stamens 4 monadelphous at base. *D. lanceolata* R. Kr. do T. Sp. 33.

6. *VEXIBIA* Raf. *Patrinia* R. 1817 but there is another G. *Patrinia*. Calix tubulose, gibbose 4 dentate, vexillum bipartite, stam 10 nearly free, pod linear compressed polysperm subtorulose. *V. Sericea* Raf. *Sophora* do Nutt T. Sp. 65.

7. *ACMISPO* Raf. (mg point hook-

ed) Differ from *Trigonella*, *Bucrates* and *Platycarpus*. Calix large deeply cleft, pod stipitate, straight compressed, swelled and hooked at the point. *J. sericeus* R. *Lotus* do P. *Trigonella Americana* N. T. Sp. 69.

8. *JAMESIA* Raf. differs from *Psoralea*, calix not glandular, hairy, 5 subulate clefts nearly equal, stamens monadelphous, pod acuminate by style, stigma smooth. *J. obovata* Raf. *Psoralea jamesii* T. Sp. 75.

9. *ORBEXILUM* Raf. differs from *Psoralea*, calix campanulate not glandular, smooth, teeth ciliate, vexillum rounded expanded (stamens diadelphous.) *O. latifolia* Raf. Ps. do T. Sp. 76.

10. *PHYSONDRA* Raf. differ *Orobis*, *Phaca* and *Psoralea*. pod stipitate swelled membranaceous, 12 reniform seeds. 1 *Ph. longifolia*. 2. *Ph. dispar* R. *Orobis* N. T. *Psoralea* Pursh.

11. *DASIIOGNA* Raf. differs *Prosopis*. Cal. camp. 4 dent. Petals 5 subequal. Stamens 10 free declinate subequal, (hypogynous!) Pistil stipitate villose, style filiform, stigma simple. Pod linear compressed bivalve torulose, pulpy within 12 seeded. *D. glandulosa* R. *Prosopis* T. Sp. 110.

12. *OREOTRYS* Raf. Dif. *Tiarella* by 5 stamens only, from *Heuchera* by 2 styles, cal. camp. equal, capsul coalescent at base. *O. bracteata* R. *Tiarella* do T. J. 168.

13. *OREOXIS* Raf. Umbel. invol. o, partial 5—6 phyllous, linear. Flowers polyg. mixed. Calix 5 teeth subulate, petals 5 yellow equal acute, end incurved. Stamens and styles divaricate, pistil ovate sulcate, fruit tricostate on the back. *O. humilis* Raf. *Anonymos*! T. J. 179.

14. *PTILORIA* Raf. Dif. *Prenanthes* by pappus sessile, plumose, perianthe 5 flore 1 *Pt. pauciflora*. 2. *Pt. tenuifolia* R. *Prenanthes* do T. J.

15. *HELIOREOS* Raf. Dif. *Pectis*, Perianthe campanulate 8 phyllous, coriaceous. Rays 7 or 8 oblong en-

tire yellow. Antheras mutic, style glandular, stigma bilobe, Seeds smooth 5 toothed. Phoranthe naked. *St. angustifolius* R. *Pectis* T. 228.

16. *BATANTHES* Raf. (mg amiable flower) Dif. *Cantua*. Calix 5 gon. 3 fid. Corolla hypocrateriform 5 lobed entire. Stamens 5 unequal incluse. Style filiform, stigma trifid. Capsule 3 locular, 3 valve polyspermous seeds angular. 1 *B. aggregata* 2 *B. longiflora* 3 *B. pungens* Raf. *Cantua* Sp. Pursh and Torrey.

17. *QUINCULA* Raf. Dif. *Physalis*. Corolla campanulate 5 lobed, with 5 opaque spots. Capsules 3 celled 3 seeded. *Q. lobata* R. *Physalis* do T. 302.

18. *LEIOSTEMON* Raf. Dif. *Pentstemon*. Calix 5 leaved equal imbricate. Cor. bilabiate tubular, upper lip bilobe, lower trilobe. Stamens smooth, sterile filament smooth obtuse shrubby. *L. purpureum* R. *Pentstemon ambiguum* Torrey.

19. *OZODYCUS* Raf. (mg fetid gourd) Monoical, perigone campanul. rugose, 5 external subulate teeth. Stamens 3 monadelphous singeneous stigmas 3 bipartite. Fruit globular smooth 4 celled, partitions spongy. Seeds on double rows oval smooth, margin acute. *O. perennis* Raf. *Cucumis* T. Sp. 396.

20. *FENELONIA* Raf. Perigone 6 sepals, 3 external trinerve, 3 internal narrower enerve. Stamens 6 equal, filaments linear narrow smooth anthers oblong. Pistil oblong obtusely triangular, style clavate subtriangular, stigma capitate trilobe. *Scape bracteata uniflora*. 1 *F. bracteata* Raf. *Ornithogalum* do T. 443. very different Genus.

I sent an account of many of those N. G. to DeCandolle in 1830. I wish Torrey had saved me the trouble by forming and naming these N. G. himself or making S. G. of them; but now I hope he will not hesitate many years to adopt them.

He has done the same with 9 doubtful sp. throughout this otherwise clever labor; he has however several new ones, but not a single N. G. Ha-

ving forgotten the rules of *Lionens Philosophia Botanica* he has mentioned a *Vitis*, *Cleome*, *Dalia*, *Brachyris* without names nor descriptions, he has some N. Sp. with names but no descriptions, and described many anonymous N. Sp! These last I have named as follows.

*Atriplex torreyana* Raf. A. anon T. 379.

*Aristolochia coriacea* Raf. A. anon T. 394.

*Sedum nuttallianum* Raf. S. anon T. 171.

*Silphium peristenium* Raf. S. anon T. 239.

*Iberis candicans* Raf. T. anon. T. 17.

*Polygala jamesi* Raf. P. anon. T. 31.

*Justicia dubia* Raf. J. anon T. 354.

*Antherix ovata* Raf. and *A. angustifolia* R. are both anonymous T. 261. 262.

Through over caution many distinct N. Sp. are made mere varieties, which I have thus rectified.

*Verbena mollis* Raf. Var. of *stricta* T. 360.

*Chenopodium simplex* Raf. Var. of *hybridum* T. 373.

*Stingingia salicifolia* Raf. Var. of *sylvatica*. T. 404.

*Vernonia marginata* Raf. Var. of *altissima* T. 203.

*Asclepias latifolia* Raf. Var. of *obtusifolia* T. 252.

While the descriptions of some sp. evince that they are different from the sp. referred to, and thus real N. Sp.

*Cercocarpus montanus* Raf. C. *fothergillides* T.

*Ammania auriculata* Raf. A. *ramosior* T.

*Gaura multicaulis* Raf. G. *coccinea* T.

*Rhodiola integrifolia* Raf. or *Sedum rhodiolooides* Raf. is *Rhodiola rosea* T. or *Sedum rhodiola*.

*Lisianthus luteus* R. L. *glaucofolius* T.

*Hydrolea latifolia* R. H. *spinosa* Torrey.

*Elephilia becki* Raf. *monarda ciliata* T.

*Chenopodium nigrum* R. *Ch. maritimum* T.

*Euphorbia missurica* R. E. *portulacoides* T.

I must end these remarks by stating that the *Inula ericoides* T. is a *Diplogon*. *D. ericoides* Raf. and that the *Broussonetia tinctoria* is my *Toxylon* 1817. quite different from the *Morus tinctoria* of the West Indies.

Thus hesitation in science is often as injurious as haste. It is even better to have two names for an object than no name at all.

108. Account of 32 N. Sp. of plants from Florida.

By C. S. RAFFINESQUE.

The peninsula of Florida promises to enlarge greatly our Flora, 2000 sp. at least must be found there, of which 1000 may be either new or tropical, and 1000 common to the other Southern States. Bartram, Williams, and Ware have published short catalogues of some. It is said that the following Bahama plants grow there.

*Cactus coronatus*. C. *nobilis*. C. *peruvianum*.

*Canella alba*. *Tamarindus indicus*. *Myrtus pimento*.

*Croton cascarilla*. C. *eleutheria*.

With some sp. of the G. *Psychotria*, *Gardenia*, *Ficus*, *Guayacum*, *Cesalpinia*, &c.

Having seen in gardens and herbaria several rare or new sp. of Florida, I will here describe some of them.

1. *Opuntia* (Cactus) *mitis* Raf. Erect, articles obovate compressed, stellated dots with 2 kinds of spines, some long subulate stiff hairy at the base, some setaceous very small. Fruit obovate umbilicate, pulp crimson. On the sea shore from Florida to Carolina. Elliot blends this and the next as *Cactus opuntia*. Flowers yellow in all the sp.

2. *Opuntia* (cactus) *Bartami* Raf. Erect branched smooth, articles oval

spines few and short. Fruit pyriform purple, pulp scarlet acid—see my *Flora Medica*, vol. ii. page 247, and Bartram's travels.

3. *Opuntia spinalba* Raf. Erect, articles elliptic, spines fasciculate white curved uncial, base bristly. Fruit obcordate purple, seeds rugose. *C. opuntia* of Lunan, hort Jam. on the keys of Florida.

Besides these 3 erect sp. there are 3 procumbent ones known to me in the U. St. my *Cactus* or *opuntia humifusa*, descr. in *Annals Nat. sp.* 115 and 2 others, which I now add here, to complete our *Opuntias*. Decandolle had proved this an extensive genus already.

4. *Opuntia cespitosa* Raf. Cespitose, procumbent, articles oboval concave, spinules fasciculate minute rufous, barbed backwards, surrounding a long central spine. Fruits aggregate subpedunculate turbinate or oblong uncial spinulose, skin thick, pulp greenish, seeds. Large lenticular in Kentucky and Tennessee.

5. *Opuntia mesacantha* Raf. procumbent, articles rounded; spinules fasciculate rufescent, central spine long brown. Fruits solitary oval, covered with spinulose thick scales. From West Kentucky to Louisiana.

6. *Malva Scandens* Raf. Pilose twining divaricate ramose, leaves 5 parted, flowers axillary solitary pedunc. segments of calix broad ovate, seeds hirsute. Mentioned by Bartram not described, cultiv. in his garden. Grows from Florida to Louisiana, flowers small greenish white.

7. *Malope lutea* Raf. 1817. *M. malacoides* of Walter, Elliot, Pursh, Nuttall! *Malva Americana* Wild and Muhl? Leaves ovate obtuse, dentate, smooth, nerves pubescent beneath, stipules lanceolate hairy, peduncles solitary axillary calix hairy petals yellow, fruit hispid globose depressed seeds compressed. Annual from Virginia to Florida. The *M. malacoides* of Europe which I have seen is quite different by leaves

elliptical crenate base cordate, large purple flowers, fruit smooth spherical, seeds round.

8. *Sabbatia brevifolia* Raf. Stem dichotomous filiform, leaves short subulate acute, flowers terminal white, calix shorter than corolla setaceous, segments of corolla obovate. Near to *S. brachiata* and *Stellaris*.

9. *Brassica floridana* Raf. Stem simple erect terete, leaves petiolate oblong acute serrate, flowers paniculate.

10. *Lobelia microphylla* Raf. Stem simple smooth, leaves minute remote ovate sessile dentate, flowers terminal few and small. Florida and Louisiana.

11. *Lobelia nudicaulis* Raf. Radical leaves oblong or cuneate smooth stem angular naked with some remote setaceous scales, flowers terminal few remote. This is perhaps the *L. pallida* of Elliot but not ours of Muhlenberg.

12. *Helonias striata* Raf. Scape angular with setaceous scales, radical leaves slender striated longer than scape, raceme oblong lax, bracts membranaceous subulate short acute, sepals obovate acute.

13. *Commelina longifolia* Raf. Stem erect smooth, leaves divaricate very long linear lanceolate acute, spathe cordate plicate ciliate triflore flowers large.

14. *Oenothera cuneifolia* R. Stem ramose divaricate, leaves cuneate entire, branches uniflore, flowers large.

15. *Clitoria parviflora* R. twining folioles elliptical obtuse base subcordate smooth, flowers solitary small.

16. *Erigeron lyratus* R. Radical leaves lyrate cuneate, scabrous with large teeth, stem striate villose, caulinar leaves adpressed cuneate remotely serrate, flowers corymbose small.

17. *Leptopoda floridana* R. Stem angular uniflore, radical leaves cuneate remote serrate acute smooth, caulinar leaves setaceous adpressed peduncles thicker above, rays yellow and short.

18. *Rudbeckia angulata* R. Stem with acute angles, uniflore, leaves adpressed hirsute oblong acute entire, the lower ones opposite, perianthe hirsute, segments linear obtuse.

19. *Silphium reticulatum* Raf. Stemless, radical leaves oblong lyrate lobate obtuse smooth, scape rough uniflore, perianthe ample, segments round reticulate venose.

20. *Vaccinium glaucum* R. Leaves ovate oblong entire, nearly obtuse, glaucous beneath, peduncles axillary 1 to 3 flore, flowers small campanulate, stamens exserted.

21. *Osmodium nigrum* R. Leaves cuneate oblong acuminate entire strigose fuscate. They become black when dry, near to *O. molle*.

22. *Typha spiralis* Raf. Leaves spirally contorted, ensiform and vaginate at the base, end flat thick obtuse, spikes annexed each with a spatha. This is the *T. latifolia* of Cuba, and the Jamaica authors.

23. *Sisyrinchium teres* Raf. Stem round, hardly biangular above, leaves narrow striate, flowers subpaniculate ample, spatha bivalve subequal membranaceous acute 2-3 flore, sepals submucronate. Florida and Louisiana.

23. *Calipogon parviflorum* Raf. Root bulbous, stem one leaved 3-5 flore, leaf long, linear striate, flowers spicate, minute, bracts subulate, labellum undulate. Fl. and Louis.

25. *Tradescantia divaricata* R. Leaves remote divaricate oblong lanceolate, base spathiform, umbel multiflore, spathas 2 subequal lanceolate divaricate, calix smooth.

26. *Tradescantia graminifolia* R. Stem slender, leaves graminiform erect, flat, striate, umbel pauciflore uneven, spatha of many short obtuse scales, calix smooth.

27. *Stachys revoluta* R. Leaves linear sessile obtuse canescent, margin revolute, whorls 6 flore, flowers subsessile, calix striate hispid subbilabiate. Fl. and Louisiana.

28. *Stachys sessiliflora* R. Leaves oblong cordate serrate acute smooth,

whorls few pauciflore, flowers sessile.

29. *Drosera uniflora* R. Leaves shortly petiolate spatulate glandular all over, scape uniflore, base leafy.

30. *Drosera sessilifolia* R. Leaves cuneate sessile, scape pauciflore pilose, flowers racemose large petals cuneate.

31. *Avicennia floridana* R. Shrubby, leaves perennial oblong acute, tomentose beneath flowers in sessile clusters. In Fl. Louis. and Jamaica, the *A. tomentosa* of Nuttall and Brown but the Asiatic sp. is a large tree with paniculate flowers.

32. *Lantana floridana* R. Branches square scabrous, leaves rugose rough, ovate lanceolate, crenate serrate, veins pubescent, petiols short, bracts subulate, capitule crowded, peduncles clavate. *L. camara* of Bart. Elliot and all our authors but different: flowers varicolor, yellow, orange, red, crimson or scarlet on same shrub, berries globular, blue, small.

#### 109. ON 3 SP. OF TYPHA.

The *Typha latifolia* was said to grow from China to America, but whenever closely described by botanists, their descriptions evince different sp. blended under that name. Those of N. and S. Europe, India, China, Africa, S. and N. America are all distinct.

We have even several sp. in N. America, the *T. spiralis* of the W. Indies and Florida was mentioned in the last essay, I now shall add two others from the South and the North.

1. *T. elatior* Raf. Stem gigantic, leaves shorter one inch broad flat, base vaginate, end acute, upper spike separate cylindric without spatha, stamens monadelphous at the base. From Carolina to Kentucky, a large Sp. from 6 to 10 feet high: the stem is round, solid and smooth as usual. It is the *T. latifolia* of Elliott and the Southern botanists.

2. *T. crassa* Raf. Stem humble,



foliose leaves as high, flat convex beneath at the base not vaginate, end obtuse. Spikes united and thick, upper subequal, between them a caducous bract ovate lanceolate membranaceous. Maryland to New York and Canada. *T. latifolia* of the Northern botanists. Stem only 3 or 4 feet high spikes 4 to 6 inches long, one inch thick, lower spike brown very dense and thick.

These 3 sp. are very distinct. Another sp. grows in Oregon.

C. S. R.

# 110. TWO NEW GENERA OF UMBELLIFEROUS PLANTS FROM KENTUCKY.

These two singular plants were discovered in 1822, one *Orimaria* is near to *Duplevrum* having entire leaves, the other *Streblanthus* is near *Eryngium* having opposite leaves and capitate flowers.

1. *ORIMARIA*. Pistil oblong, seeds linear smooth black, angular behind. Calix entire. Petals 5 white minute base with a foveole or small round pit, end retuse involute, tip adnate inside. Stamens 5 small anthers subsessile round. Stigma 2 sessile small. General Involucre triphyllous subulate, partial 5 phyllous, folioles equal elliptic acuminate scarious trinerve. Annual herbs smooth dichotomous, leaves alternate sessile entire linear.

*Orimaria filiformis*. Raf. Stem filiform flexuose, dichotomely branched, leaves remote linear—filiform, acute, lower nearer with broader retuse tip. Umbels terminal 3-4fid, umbellule 3-6flore, peduncles unequal, shorter than involucre.

In the barrens or glades of West Kentucky, rare, vernal. Stem 4 to 8 inches. Habit of a grass. Flowers white minute hidden in the involucre. Different from *Duplevrum* by the petals and seeds, the foveole of the petals has suggested the generic name.

2. *STREBLANTHUS*. Flowers monical in separate heads. Involucre 4-5 phyllous, folioles linear unequal,

phoranthe cylindrical naked. M. fl. in ovate heads, calix 4 fid, pistil adherent abortive. Petals none. Stamens 4 subsessile very small. F. fl. in oblong heads, calix 4 toothed persistent, pistil obovate punctate. Petals none. Styles 2 filiform persistent, stigmas capitate. Fruit bipartite, crowned, 2 seeds convex scrobiculate behind. Annual herbs prostrate, leaves opposite simple heads axillary.

*Streblanthus auriculatus* Raf. Smooth prostrate, stems filiform flexuose, leaves opposite subsessile, lower petiolate, ovate lanceolate, base with 1 or 2 auricles, end acute, heads axillary solitary pedunculate.

A striking N. G. of the group of *Eryngides* by its monical apetalous tetrandrous flowers. The *Er. cervantesi* of Mexico, *Er. tenue* of Carolina and *Er. floridanum* of Torrey's herbarium come nearer to it and perhaps belong to this G. Found in the glades of W. Kentucky. Estival, heads somewhat bluish. Stems a foot long, leaves entire or with some notches, auricles unequal when 2. *Streblanthus* means deceitful flowers, since they resemble *Eclipta*, *Scubiosa* and many Rubiaceae.

C. S. RAFINESQUE.

# 111. ON 12 N. SP. OF PLANTS FROM ILLINOIS, &c.

By C. S. Rafinesque.

They were chiefly discovered in 1818, or given me since by Dr. Muller and Dr. Ward.

1. *Collinsia purpurea* Raf. 1818. Stems simple pauciflore, leaves remote, lower obovate, upper linear acute, peduncles equal to flower, calix campanulate, corolla purple, upper lip short.... Annular and vernal like the *C. bicolor* or *verna*, on the bank of the Wabash, only 3 to 4 inches high.

2. *Plantago gonophylla* Raf. 1818. Smooth stemless, leaves petiolate ovate oblong acute, margin unequally angular, 7 nerved. Scape round spike slender elongate, flowers maxillated lax ovate globose, bracts and

segments of calix ovate obtuse concave, segments of corolla ovate acute....Perennial estival, scape 1 or 2 feet, Illinois and Ohio.

3. *Plantago atrofusca* Raf. 1823. Stemless, leaves sessile lanceolate acute entire 5 nerved, subpubescent base hirsute. Scapes flexuose filiform pubescent, angular above, spike ovate dense blackish smooth. bracts imbricate broad ovate acuminate.... Perennial, estival, in arid hills of S. Illinois and W. Kentucky, leaves 1 or 2 inches, scapes 3 to 6.

4. *Veronica connata* Raf. 1818. Erect smooth, stem round fistular, leaves connate lanceolate acute entire, racemes axillary divaricate very long, lax, bracts linear, pedicels double of bracts, capsules bilobed compressed.... Annual, vernal, flowers blue, near to *V. Scutellata* and *V. uliginosa*, but larger, leaves quite united and perforated by the stem. In W. Kenty. Missouri and Illinois.

5. *Tradescantia rupestris* Raf. 1819. Stem simple smooth, leaves longer slender narrow canaliculate smooth, umbel multiflore, spathas divaricate very long like leaves, peduncles pilose recurved, calix pilose behind.... Vernal flowers pale blue, on the cliffs and rocks of the Wabash, Kentucky, &c. 15 to 20 inches high, leaves a foot long.

6. *Tradescantia brevicaulis* Raf. 1818. Stem simple very short, flexuose, leaves much longer, narrow, nearly flat, carinate striate, base vaginate tubular membranaceous ciliate: umbel pauciflore, bracts equal to leaves, peduncles and calix very pilose.... Vernal fl. blue small, a small sp. stem only 3 to 6 inches. Illinois and Kentucky.

7. *Tradescantia flexuosa* Raf. 1820. Stem ramose flexuose, sulcate leaves broader lanceolate, flat pubescent, pale beneath: umbels axillary subsessile, bracts lanceolate short, peduncles and calix villose.... Estival flower deep blue. Stem 2 or 3 feet high nearly zigzag, leaves one

inch broad. Akin to *Tr. Subaspera* but very distinct. In Kentucky and Missouri.

8. *Tradescantia canaliculata* Raf. Entirely smooth, stem simple slender, leaves subequal, slender narrow canaliculate falcate, base tubular vaginate; umbel terminal pauciflore, bracts short flat, one very minute, peduncles smooth nodding, calix smooth.... Estival, in Kentucky a foot high. These and the 2 Tr. of Florida make 6 N. Sp. of this fine G. which has lately been increased from 2 to 12 Sp. from the U. S.

9. *Orchis glareosa* Raf. 1818. Stem round slender, leaves narrow lanceolate adpressed, spike short oblong, bracts lanceolate longer than flowers, spur filiform equal to the germ, labellum concave trilobed, middle lobe retuse.... Estival flowers greenish yellow, in the glades of Illinois and W. Kentucky, one foot high, near to *O. fuscata* and *O. herbicola*. Probably *Habenaria glareosa* Raf.

10. *Helichroa fuscata* Raf. 1818. Rough, stem angular pauciflore, lower leaves long petiolate ovate acute 5 nerved subdentate, upper leaves subsessile lanceolate, segments of perianthe reflexed rays cuspidate.... Glades of the Wabash. Estival flowers of a brown purple, 3 inches diameter, rays narrow, stem 1 to 3 feet high. My *G. Helichroa* 1825 is based on the *Rudbeckias* akin to *R. purpurea*.

11. *Helichroa crocea* Raf. 1818. Hirsute, stem angular uniflore, naked above, leaves all sessile lanceolate, base rounded, end gradually acuminate, outer segments of the perianthe lanceolate reflexed.... Glades of Wabash, 1 or 2 feet high. Estival flowers of saffron color.

12. *Prenantus spicata* Raf. 1818. Stem angular rough above, nearly simple, leaves undivided smooth oval lanceolate, flowers spicate scattered, bracts linear acute hirsute, perianthe multiflore 8-12 phyllous, segments linear obtuse hirsute in the

middle, calicule hirsute lanceolate acute.... Glades Illinois and Ohio, 2 feet high, estival fl. ochroleucous, seeds compressed oboval pappus fulvous. Near to *Pr. racemosa*, but flowers sessile.

112. ON 17 N. SP. OF PLANTS FROM UPPER CANADA, &c. BY C. S. RAFINESQUE.

They are chiefly from the islands of the St. Lawrence, near Lake Ontario, seen in the herbal of Mr. Harbors in 1816, or collected near Lake Erie and Niagara falls in 1826.

1. *Cornus cyananthus* Raf. 1816. Stem herbaceous angular, leaves 6 whorled sessile obovate acuminate, sulcate above, glaucous beneath, flowers blue capitate subcymose naked pedunculate, berries oblong... A beautiful striking sp. near to *C. canadensis*, same size, but flowers blue with a long style: very rare.

2. *Cornus suffruticosus* Raf. Stem humble shrubby, leaves petiolate ovate, base acute, end obtusely acuminate, margin cartilaginous, above hispidule, beneath smooth glaucous, cymes pedunculate. A small shrub 12 to 20 inches high, with red twigs, small leaves, white flowers estival. From Lake Champlain to Lake Erie in Ohio.

3. *Pyrola flexuosa* Raf. 1816. Stemless, radical leaves on long petioles, elliptical, both ends subacute, remotely denticulate, scape flexuose raceme oblong dense... Is it a variety of *P. dentata*?

4. *Sigillaria ciliata* Raf. 1816. Stem terete flexuose leaves clasping smooth ovate oblong acuminate, margin ciliate glaucous beneath peduncles uniflore, berries red.... Very different from the *Convallaria ciliata* of authors which is not a *Sigillaria* or *Axillaria*, but a *Mayanthus* or *Racemaria*.

5. *Lathyrus incurvus* Raf. Folioles 8 ovate or obovate acute smooth veins longitudinal, racemes axillary multiflore incurved, peduncles curved.... On Lakes Erie and Ontario, flowers blue small.

6. *Lysimachia (Tridynia) sessilifolia* Raf. Leaves opposite sessile ovate lanceolate obtuse, punctate, pale beneath, flowers opposite or whorled, peduncles short, petals entire.... Near to *L. revoluta*. Flowers yellow with 5 unequal monadelphous stamens as in *S. G.* or *G. Tridynia*.

7. *Thalictrum pauciflorum* Raf. Dioical, leaves biternate, folioles ovate acute entire smooth, pale beneath, terminal petiolate subcordate trifid, panicle terminal pauciflore, filaments filiform.... Near to *Th. dioicum*, but different, stem 15 to 18 inches flowers white estival. On L. Ontario, &c.

8. *Arenaria flexuosa* Raf. Stem flexuose subramose erect, 2-4 flore, leaves ovate oblong acute trinerve pubescent, flowers terminal, peduncles long, segments of calix ovate obtuse, shorter than petals.... In islands, small fl. white, very different from *A. lateriflora*.

9. *Arenaria connata* Raf. Stem erect simple slender biflore, leaves connate cuneate oblong pubescent acute, flowers apetalous, cal. segments lanceolate.... The apetalous sp. of this *G.* must form a *S. G. Monilix*.

10. *Orchis (Platanthera) rotundifolia* Raf. 1816. Two opposite leaves orbicular emarginate multinerve, very smooth lucid, flowers racemose lax, bracts oblong lanceolate longer than peduncles, germ angular clavate curved reflexed, spur filiform longer than germ, petals broad ovate, labellum filiform obtuse.... Fine sp. stem 18 inches, flowers white. It appears different both from *O. macrophylla* and *Orbiculata* (nearer the last) by the racemose flowers, &c. Leaves in all large nearly radical.

11. *Caprifolium dentatum* Raf. Leaves connate oblong acute remotely toothed, glaucous beneath, last pair united in a campanulate biacute form, flowers sessile ternate, berries red.... Near *C. flarum*.

12. *Sium rugosum* Raf. Five

pairs of folioles, lanceolate, elongate, pectinate—serrate unequally, acute, rugose! Involucres unequal pinnatifid, partial simple linear....Fl. white estival, poisonous, see my Med. Fl. vol. 2 p. 262. On the Lakes from New York to Ohio.

13. *Asclepias rotundifolia* Raf. Stem simple, leaves opposite petiolate rounded or obovate obtuse smooth, glaucous beneath....Very different from *A. obovata* by smooth glaucous leaves.

14. *Asclepias dasypus* Raf. Stem simple, leaves opposite, subsessile elliptical acuminate undulate, villose beneath....Is it a variety of *A. purpurascens*?

15. *Fragaria serotina* Raf. Stemless, dwarf, leaves radical subsessile, pilose, folioles rounded crenate scapes uniflore, fruits depressed autumnal....Singular Sp. producing fl. and fruits only in Sept. or October.

16. *Fragaria elatior* Raf. Stem erect bipedal, leaves smooth, folioles petiolate ovate oblong, base entire, glaucous beneath, fruits oblong uncinate....This and the last are as different sp. as can be, my varieties of strawberries in Med. Fl. vol. 1. are probably as many sp. likewise.

17. *Viola eriocarpa* Raf. Caulescent, leaves broad deltoid, obtusely crenate, nerves pubescent, stipules lanceolate entire, flowers geminate subsessile, capsules wooly white.

#### 113. VERNASOLIS A NEW GENUS BY C. S. RAFINESQUE.

I discovered in 1823 a fine N. G. of Vernal radiate plants near to *Gallardia*, in the barrens or glades of West Kentucky and W. Tennessee, and not less than 3 sp. of it. Such vernal plants being rare I named the G. Vernal Sun.

VERNASOLIS. Perianthe triple, each 6-10 parted, segments oblong obtuse, outer smaller uncolored, medial with colored margin, inner colored. Phoranth flat, polygamous superfluous, chaff linear membranaceous entire. Rays 6 to 12 sterile spatulate end unequally 5 lobed.

Floscules of disk many, tube short limb campanulate membranaceous 5 fid. stamens subequal brown. Style included, 2 thick glandular oblong stigmas. Some sterile flosc. mixt. Seeds oblong compressed black, crowned by an umbilicate margin and 2 membranaceous scales. *Roots creeping perennial, flowers yellow vernal on long uniflore peduncles.*

1. *V. glauca* Raf. Stem erect sulcate pauciflore, base hirsute, leaves alternate entire obtuse ciliate glaucous smooth, lower petiolate obovate rounded, upper sessile obovate oblong....Small plant less than a foot high, with some varieties 1. *Parviflora*, 2. *Suboppositifolia*.

2. *V. auriculata* Raf. Stemless, creeping, radical leaves petiolate obovate with 1 or 2 auricles, obtuse, smooth, glaucous beneath, scapes elongate uniflore terete.

3. *V. heterophylla* Raf. Caulescent subcreeping, radical leaves petiolate cuneate obovate, obtuse entire. Stem striate hirsute 2-3 flore, caulinar leaves opposite, subsessile subdentate, subhirsute, trilobate, lateral lobes oblong smaller, medial obovate.

#### 114. LOPHACTIS N. G. BY C. S. RAFINESQUE.

I noticed in 1818 this plant on the Wabash, but out of blossom, in 1821. Dr. Ward brought me a perfect specimen from White R. Indiana. It is also a N. G. of radiate plant near the *Vernasolis*, *Leptopoda* and *Baldwinia*. The name means crested rays.

LOPHACTIS. Perianthe double, each 8 phyllous, segments ovate obtuse, outer spreading smaller, inner larger erect. Polygamy necessary. Phoranth convex, chaff filiform. Rays 8 cuneate, end broad crested or unequally 5 lobed. Style very short. Seeds oblong crowned by 5 to 8 scales elongate, cristate on the back. Floscules of the disk male tubulose 5 toothed.

*L. uniflora* Raf. Smooth, stem erect uniflore striate, leaves oppo-

site cuneate lanceolate remote obtuse entire rugose, lower petiolate, upper sessile....Stem 12 or 15 inches high, flower estival, rays yellow, disk purplish black.

115. ON 4 N. SP. OF NORTH AMERICAN TULIPS BY C. S. R.

I have the pleasure to introduce this fine G. into our Flora, by noticing four N. Sp. of it; but Pursh had already one, which he wrongly united to *Lilium* or *Lily*.

1. *Tulipa bicolor* Raf. Stem flexuose uniflora leaves flat oval lanceolate acuminate subundulate glaucous flowers erect, petals shortly acuminate the outer ovate, the inner obovate....Native of Arkansas, in my herbarium; seen alive in a garden of Kentucky in 1821. Stem one foot high, flowers half the size of common tulips, white but lilac color outside.

2. *Tulipa aurea* Raf. Stem slender straight uniflora, leaves radical and caulinar slender graminiform, canaliculate, end falcate; flower erect, petals yellow acuminate outer lanceolate, inner ovate....Seen in gardens, native place unknown, perhaps not American. Stem less than a foot, flowers of a golden yellow, smaller than the last.

3. *Tulipa montana* Raf. Stem uniflora one leaved, radical leaves equal to stem, elongate narrow flat acute, stem leaf short vaginate, flower erect, petals lanceolate acute orange color, stamens equal in length....I have not seen this sp. but I describe it from a drawing of Audubon, who discovered it in May 1809, in the Alleghany mountains. Over a foot high, flower as large as the garden tulip.

4. *Tulipa pudica* Raf. (*Amblirion pudicum* Raf. 1816.) *Lilium pudicum* Pursh. Stem uniflora curved above, leaves lanceolate linear acute, flower pendulous petals obovate spatulate very obtuse, yellow....Evidently a tulip by the habit and lacking the groove on the petals forming the G. *Lilium*....If it has a style it will form a S. G. *Amblirion* or pe-

culiar G. between *Tutipa* and *Fritillaria*. From the Oregon country.

116. NEW PLANTS OF THE ALLEGHANY MTS. BY C. S. RAFFIN-ESQUE.

Among 30 rare plants collected this year in the Alleghanies of Maryland and Pennsylvania one appears to me a N. G. and half a dozen are N. Sp. which I shall concisely designate.

N. G. *OCHRONELIS*. Perianthe polyphyllous in a double series. Phoranche flat. Chaff membranaceous subtridentate, lateral teeth 1 or 2 unequal. Rays 12 to 15 narrow entire. seeds compressed bidentate, teeth unequal membranaceous..This G. has the perianthe of *Rudbeckia*, and the remainder as some sp. of *Helianthus*, but the rays as in *Dianthus* (*H. aristatus*) which has phoranche hemispherical &c. The name means pale Sun.

1. *O. sulfurea* Raf. Stem erect smooth striated, leaves opposite or ternate, upper alternate, all sessile lanceolate rough, base acute, end acuminate, margin subserrate; flowers terminal, perianthe segments linear lanceolate ciliate....In meadows of mts. Stem 3 to 6 feet high, flowers very pale yellow. Several Var. 1. *Uniflora*. 2. *Pauciflora*. 3. *Multiflora*. 4. *Ternifolia*, &c. Probably a *Helianthus* of authors, which?

2. *Sanguisorba palustris* Raf. Stem virgate, folioles petiolate unequal elliptic, pectinate serrate, base cordate, very smooth, lower leaves on long petioles, upper leaves sessile, spikes on long peduncles, cylindrical, bracts subulate, stamens filiform clavate exserted....In a single swamp in the mts. of Pens. 3 or 4 feet high, entirely smooth, flowers white in a spike 3 to 5 inches long.

3. *Impatiens montana* Raf. Stem flexuose very branched, leaves small ovate oblong, acute at both ends, mucronate, remotely mucronately serrate, peduncles solitary 2-4 flore, galea longer than the petals, spur resupinate short....In rocky streams of the mts. stem 2 or 3 feet high,

leaves and flowers small, fl. saffron color with few red spots: distinct from *I. fulva*.

4. *Erysimum angustifolium* Raf. Roughish, pubescent, glaucescent, leaves linear oblong, base attenuate, end acute, very entire, racemes naked, siliques linear compressed, style persistent....Probably the *E. cheiranthoides* of Pursh, Nuttall &c. quite different from the European ditto which has large lanceolate dentate leaves. Found in Maryland, annual, stem 3 to 6 inches, flowers small yellow.

5. *Gerardia rupestris* Raf. Very smooth, stem purplish fistulose, leaves sessile bipinnatifid, segments deep remote acute, sinusses rounded upper leaves oblong pectinate, bracts lanceolate entire, racemes often ramose, secundiflore, peduncles short calix 5 fid....Fine Sp. near *G. glauca*, probably the real *Rhinanthus Virginicus* of L. Stem 2 or 3 feet high, flowers yellow rather small. On the rocks of the Alleghanies and Tuscarora mts.

6. *Verbena incarnata* Raf. Stem branched, leaves ovate lanceolate serrate rough, flowers in simple slender short spikes....On the Juniata R. one foot high, flowers flesh colored, differs from *V. urticifolia* by narrow leaves, spikes not paniculate, nor flowers white.

7. *Arenaria sperguloides* Raf. Stem procumbent diffuse very ramose leaves filiform setaceous in opposite fascicles smooth, flowers in naked panicles, calix acute....Akin to *A. glabra* and *stricta*, but not erect and leaves like those of asparagus. On a single rock in Pennsylvania.

8. *Glycine montana* Raf. Stem suberect flexuose angular pilose backwards, leaves ternate, folioles oval acute, lateral ones oblique or subcordate at the base, stipules subulate, flowers solitary subsessile, pods oblong flat pendulous 2-3 seeded, seeds lenticular....On the top of the Alleghanies, annual, habit of *Amphicarpa*, but calix acute at base, pod sessile although attenuated at base, as in *Glycine*.

# 117. CONCHOLOGY. TWO NEW RIVALVE FLUVIATILE SHELLS OF S. AMERICA, BY C. S. RAFINESQUE.

These two fine shells are from the Cabinet of Professor Green, who permitted me to draw them and describe last March. They are both from the R. Parana above Buenos Ayres.

1. *Anodonta aperta* Raf. Oval elliptical much swelled, broader behind and slanting, very smooth and dark brown outside, quite gaping below, iridescent white inside. Length and diameter  $\frac{1}{2}$  of breadth, axis at  $\frac{1}{4}$ . ...Fine large sp. 6 inches broad, shell rather thick, beaks prominent, not gaping at the ends but below; hinge straight slanting ending in 2 small angles, no wrinkles on it, but slightly flexuolate beneath.

2. *Unio paphos* Raf. Oval, flexuose and subtruncate behind, with an oblique ridge from the beak, brown outside with many minute concentric striae, inside purplish white. Length 2-3, diameter 7-18, axis at 1-3 of the breadth....Pretty Sp. 2 inches broad, shell rather thin for Unios, lamellar tooth slightly curved, cardinal tooth sub-bilobe crenate. Beaks not prominent.

# 118. ODATELIA N. G. of N. American Bivalve Fluvial shell, by C. S. Rafinesque.

One of our Ohio shells, which has been put with the *Unios* or *Anodonta* by different writers; it was unknown to me till I observed it in Prof. Green's cabinet, and I immediately ascertained that it must form a N. G. or group between *Anodonta* and *Sulcularia*. I call it *Odateba* meaning imperfect teeth.

*ODATELIA* Raf. Cardinal tooth imperfect like a callosity, with a large desinense as in *Alasmodon*, becoming an imperfect lamellar tooth angular as in *Lasmigona*.... This G. must belong to the series of *Anodonta*, but forms the passage with *Alasmodon*. How Say and Lea could put it with *Unio*! is rather strange.

*Odateba radiata* Raf. Elliptical flattened elongate, broader behind with subtruncate end, outside olivaceous brown, with black rays, inside bluish iridescent. Length 1-3, diameter 2-9, axis at 2-9 of the length.

*Unio Oriens*. Lea.

*Unio dehiacens*. Say.

*Anodonta prelonga*. Green.

Breadth over 2 inches, shell rather thin both ends rounded and brown.